



AMERICAN BUILDER and BUILDING AGE, with which are incorporated National Builder, Permanent Builder and the Builder's Journal, is published on the first day of each month by the

**SIMMONS-BOARDMAN
PUBLISHING CORPORATION**
105 West Adams Street
Chicago, Ill.

NEW YORK
30 Church Street

WASHINGTON, D. C.
National Press Building

SEATTLE
1038 Henry Building

SAN FRANCISCO
485 California St.

LOS ANGELES
530 West 6th St.



Samuel O. Dunn, *Chairman of Board*; Henry Lee, *President*; Bernard L. Johnson, Robert H. Morris, and Delbert W. Smith, *Vice-Presidents*; J. S. Crane, *Eastern Manager*; Roy V. Wright, *Secretary*; Elmer T. Howson, *Assistant Secretary*; John T. De Mott, *Treasurer*.

Subscription price in the United States and Possessions and Canada, 1 year, \$2.00, 2 years, \$3.00, 3 years, \$4.00; foreign countries, 1 year, \$4.00, 2 years, \$7.00, 3 years, \$10.00. Single copies 25 cents each. Address H. E. McCandless, Circulation Manager, 30 Church Street, New York, N.Y.

Member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulation (A. B. C.)

(A Simmons-Boardman Publication)

AMERICAN BUILDER

and Building Age

NAME REGISTERED U. S. PATENT OFFICE AND CANADIAN REGISTRAR OF TRADE MARK

FEBRUARY, 1939

61st Year

Vol. 61, No. 2

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PUBLISHER'S PAGE

F. H. A. And The New Deal

"I DON'T like my technical business and my politics mixed," writes a contractor and developer in a Middle Western city. "As a technical publication your magazine is splendid. I use it all the time. As a political organ you are a 'wash-out'. What you say just doesn't make sense. If it wasn't for F. H. A., a New Deal proposition, almost any builder in our district would be out of a job."

Thanks for the bouquet! But do we deserve the brickbat?

We agree with our correspondent regarding the benefits of F. H. A. But why criticize us while commending it? The *American Builder* and its staff originated the F. H. A. plan of using government credit to stimulate home modernization and building, (see editorial in November, 1933, issue entitled, "Federal Loans for Home Building") and carried on most of the propaganda that resulted in the passage of the original Federal Housing Act.

This paper ever since has done more than any other to promote the Act's successful operation. And meantime it has criticized and opposed most New Deal policies. But this has not been inconsistent. And it has not been "politics," but business.

IN 1933 Congress had appropriated billions of dollars to promote recovery. The *American Builder* feared the opposite effect—that too much money would be diverted from private investment to unproductive public works and other wasteful purposes; and that thereby recovery would be retarded. But there was no question there was need of a large private expenditure on homes. And there was no question such expenditures would promote recovery, because it would help create private property that would be useful and valuable. But how bring it about? Under the economic conditions and government policies prevailing at the time, this ap-

parently could be done only by the use of a large amount of government credit.

And this has been the result. Contracts for residential construction increased from less than 300 million dollars annually in 1933 and 1934 to about 1,200 million dollars in 1938; and it has all been increase in private investment, although aided by government guarantees.

THEREIN lies the vital difference between F. H. A. and most other New Deal policies. F. H. A. has stimulated useful private investment. Most other New Deal policies have retarded private investment; and some have caused huge wasteful government expenditures. And therein lies the reason why *American Builder* has supported F. H. A. and opposed most New Deal policies. In our opinion F. H. A. would not have been needed to help revive home-building excepting for New Deal policies tending to retard private investment; and F. H. A. would have been much more effective in stimulating home-building without these other retarding New Deal policies.

If that is talking "politics" it is because business has become so involved in politics that it is now impossible intelligently to talk business without talking politics.

Our correspondent evidently believes what the *American Builder* said "made sense" when this paper started and pushed the movement that resulted in F. H. A. May not what it has said since about other economic matters also have "made sense?" For, after all, it is indisputable that under New Deal policies there has never yet been full recovery from the "depression"—or even from the severe 1937-1938 New Deal "recession."

Samuel O. Dunn

FORESIGHT PAYS

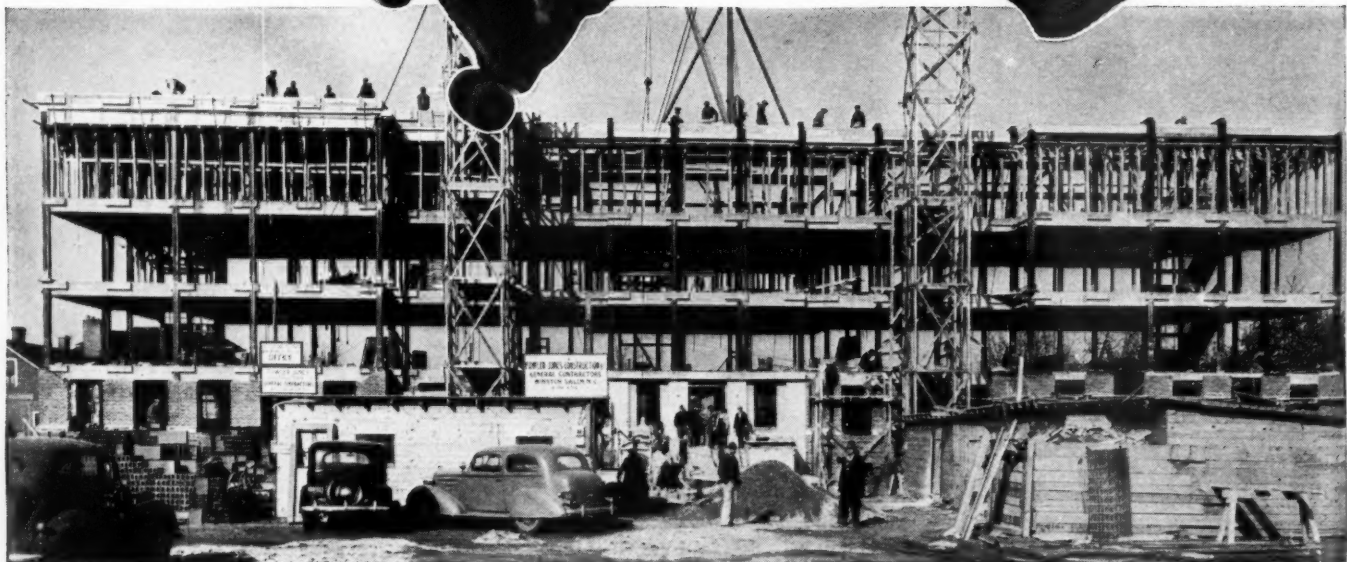
**FIGURING LOW-COST ERECTION SCHEDULE
SAVED \$750 ON FORMS ALONE, ON THIS JOB**

NO use talking, foresight does pay. Take this City Colored Hospital Building (below), Winston-Salem, N. C.; Northrup & O'Brien, architects. Fowler-Jones Construction Co., contractors, Winston-Salem, figured form costs and erection time with both Lone Star and 'Incor' 24-Hour Cement.

'Incor' concrete, poured one day, stripped the next, showed the lowest cost. Form requirements were cut in half, saving \$750 on form lumber and labor. After deducting 'Incor's extra cost, the net saving on forms alone was 21¢ a cu. yd. of finished concrete. And faster erection cut job overhead, which meant further economies.

On your next job, figure with both Lone Star and 'Incor'. Use 'Incor'* if it shows you a profit; otherwise, use Lone Star, the quality Portland cement for more than a quarter century. Write for new book, "Cutting Concrete Costs;" gives quick, easy estimating method. Lone Star Cement Corporation, Room 2230, 342 Madison Avenue, New York.

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AMERICAN BUILDER

AND BUILDING AGE

Can Building Costs Be Stabilized?

WILL material prices and building costs rise sharply in 1939? This is a question that is on the tongues of many persons and has been put to *American Builder* with great frequency of late. It is a question this publication cannot answer. In fact, it can hardly be discussed without bringing criticism from some sources. *American Builder* feels, however, that the dangers inherent in any sharp increase in building costs in 1939 are so great that it would be neglecting an obvious duty to fail to point them out.

The situation is obvious. A considerable increase in private residential building is well under way. At the same time, a large public housing program is getting into the construction stage. To be exact, some 220 local housing authorities have been organized and, as of January 1, had made loans or commitments totaling 650-million dollars. This means that 60,000 to 75,000 new public-housing and slum-clearance dwelling units will probably be built in 1939, which is about 15 percent of the total number of new dwellings estimated for the year.

Undoubtedly this means a sharp increase in demand for materials, land, labor, financing and for the services of contractors, subcontractors, architects and distributors of building products. These are the men who are daily writing the answer to the above question. But, as the answer is written, perhaps it would be well for all of us in this industry to bear in mind a few important facts.

If all of the important factors in the building industry decide, as many are likely, that the present increase in building gives them an opportunity to boost their present prices, wages or charge for services, it will undoubtedly result in a sharp increase in the total cost of new properties. It should not require very long memories to recall what happened in 1936 and '37. In the fall of 1936 and '37 a vigorous building boom was getting under way, but building costs rose even more sharply all along the line. The result was the most drastic curtailment of construction in midsummer of 1937 that has ever hit the building industry. Then building costs dropped to about where they were at the beginning of '37 and have lately been stabilized at this point. Will the history of 1936 and '37 be repeated?

Three important dangers lie in any serious advance in building costs in 1939. The first is: it may very possibly strangle private construction without retarding public building. A second great danger is that it will give the private building industry—especially home building—a worse reputation and the worst kind of publicity. It will bring on once more the public clamor about

the "high cost" of home ownership. *American Builder*, through its More House for the Money program has brought about a great change in public sentiment on this point. The clamor about "high cost" has practically disappeared. But the repetition of the 1936-'37 increases will bring it back.

A third and important danger inherent in any sharp increase in building costs is faced by manufacturers, dealers and distributors of building materials. In the city of Washington, D. C., there is a high-powered and active organization known as the Temporary National Economic Committee, made up of senators, congressmen and the heads of several important government departments. It is reliably rumored that this Committee is very likely to be concerned about price increases in the building industry. The name commonly applied by newspaper men and others to the work of this Committee is the "Monopoly Investigation." Need any more be said?

Prices vs. Volume

American Builder believes there is a growing feeling among manufacturers, retailers and construction men that a larger volume of business at present levels is preferable to a smaller volume at higher prices. A vigorous expansion in the volume of residential construction is possible and probable in the next few years if not stifled by too rapid price advances. If some sort of "gentlemen's agreement" could be effected as was done in England a few years back that would stabilize building costs, the resulting large volume would produce more houses, better houses, more employment and more profits for everyone concerned.

Responsibility for an increase in the cost of the final product, a completed home on its lot, is hard to fix. It is not usually caused by any single individual or group of individuals. A five percent increase on any one raw material has only a slight effect on the cost of the completed residential property. Similarly, a five percent wage increase for any one trade would not make a material difference. But if a considerable number of materials and a considerable number of wages go up five percent, the total increase is great. Still more important, if each of the subcontractors on a job figures a few percent more for profit and overhead, encouraged by higher material costs, the resulting increase in the total cost of the house is serious. If to all of the foregoing is added a higher profit by the general contractor, or a greater profit on land, or increased fees for architects, or increases in financing costs, the total is likely to be prohibitive.



Precut Lumber

FIG. I—ALL OF THE LUMBER on the Gilbert and Varker houses is precut on a power saw and delivered, according to an exacting production schedule, by truck. In the photograph at left you see a truckload including the complete framing material, which has just been delivered. This is piled in the truck in the correct order for use on the house. All notching, angle cuts, rafters, bridging and other cutting has been done and the material is ready for quick erection on each house.



Factory-Built Stairs

FIG. II—LABOR TIME on the job is saved in the Gilbert and Varker houses by use of lightweight steel stairs, both for first and second floors. These have a factory finish of enamel, have linoleum treads, and can be installed in a fraction of the time it takes to build stairs by hand; supplied by Overly Mfg. Co. of Greensburg, Pa.

By J. B. MASON

Mass Production Methods at Clairton

Engineers Adapt Large Job Methods to Small Home Building in 1,200-House Project. Use Factory Fabricated Stairs, Windows, Trim, Precut Lumber

"OUR biggest job is production, not construction," Royce W. Gilbert, president of the firm of Gilbert and Varker, told me as we tramped over the 540-acre site of what will be one of the largest industrial home projects in the world.

He pointed out that as engineers he and his partner, William M. Varker, had developed mass production technique on this 1,200-house development for Carnegie-Illinois steel workers calling for the smooth flow of materials from many sources to the job and the houses.

As told in the December *American Builder*, the Gilbert and Varker houses are being constructed under Section 210 of the Federal Housing Act, financed by a large insurance company, and can be either rented or sold to the workers in the steel mills of the Pittsburgh area. Details of the use of plywood for sheathing and interior walls was described.

Long accustomed to large-scale engineering projects, Gilbert and Varker have spent many years perfecting a technique of mass production for low cost houses. Plans, materials and equipment are not only detailed with the minutest care in advance but materials are charted through the entire course of the operation and followed by expert checkers. With 150 truckloads of materials a day going into the site, every item is checked and double-checked according to the elaborate schedule.

Engineering precision is another drastic demand of this firm. Because so many of the products are prefabricated,

New Materials, New Methods and Skillful Engineering Technique Make Gilbert and Varker Home Project at Clairton, Pa., Significant to Builders. "Our Biggest Job is Production, Not Construction," Says Royce W. Gilbert

cated in advance, every opening and dimension must be accurate to a fraction of an inch. The blueprints show the exact location in fractions of an inch of every water pipe and every fixture. A smart but simple idea has been devised to insure accuracy—a steel sill plate and ribbon with welded tabs which locate and automatically space studding at exactly the right points. In effect these act as a template for the entire house (for details see page 82, Dec. *American Builder*).

Getting off to an efficient start, Gilbert and Varker place the concrete basement floor and foundation in one operation. This means that floor and foundation are one monolithic unit, and the return of the concrete crew, after the house is built, for a second trip to put in the basement floor is eliminated (see Fig. III). A 3½-inch shelf rises above the floor, upon which the basement wall tile are laid. It is necessary for the plumbers to be the first crew on the job after the excavation is completed.

Basement walls are built of Speedlock hollow tile, 8 by 8 by 16 inches, supplied by National Fireproofing Co. These are lightweight and have a handy grip which makes for rapid laying. A waterproofing of one coat of Koppers' asphalt paint is applied to the outside.

A sheet-steel termite shield is placed upon the top of the foundation, and over this the metal sill plate with cemented stud spacer tabs applied. It is set in mortar and bolted in place (see Fig. IV).

Important in the operations of Gilbert and Varker is the precutting of all lumber. A power saw and woodworker has been set up at the point of delivery of lumber. When the foundation for one of the houses is ready, the complete framing material, including bridging is cut, loaded on a truck and delivered as shown on Fig. I. When



FIG. III—ONE PIECE FLOOR AND FOUNDATION—The monolithic concrete floor and footing with a 3½-in. raised edge are poured in one operation, thus eliminating a second return of the concrete crew. Plumbing and sewage pipes have to be laid before pouring is done.



FIG. IV—HANDY GRIP, LIGHTWEIGHT TERRA COTTA TILES are laid up rapidly and a metal termite shield applied. Steel sill with welded stud spacer is then bolted to foundation in a bed of mortar.

FIG. VI—COLORED PORCELAIN ENAMEL STEEL CORNERBOARD made by Ingram-Richardson Mfg. Co., is used for exterior trim. This is delivered to job in standard lengths requiring no cutting. Note nailing flange to take the shingles.



FIG. V—EXTERIOR DETAILS (below) include metal cornice and trim, well caulked; transite chimney; cement asbestos shingles laid over lapped strips of 40-lb. roofing felt as can be seen in this picture.





FIG. VII—PREFABRICATED METAL DOOR HOOD of colored porcelain enamel steel is quickly set into place by workmen on Clairton home. Seven standard entrance hoods as well as shutters were fabricated for these houses by Porcelain Metals Corp., Louisville, Ky.

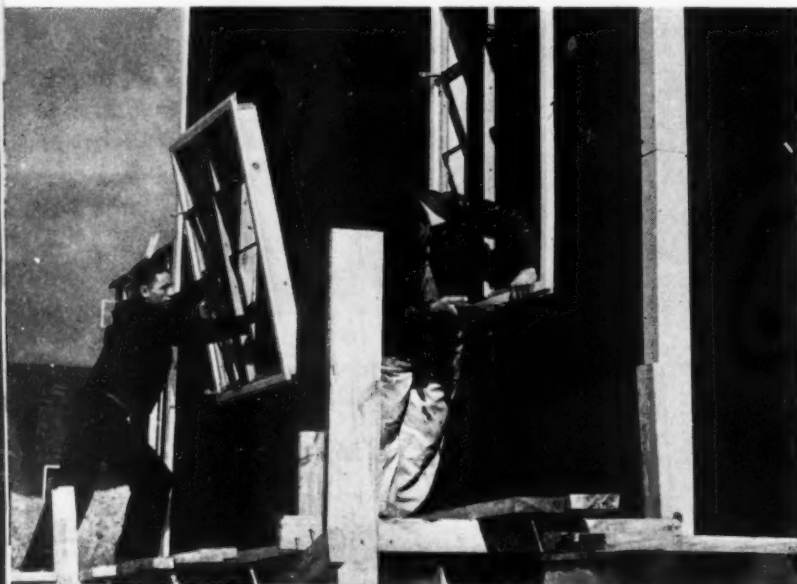


FIG. VIII—SELF-FLASHING STEEL WINDOWS with porcelain enamel exterior and interior trim attached are here shown being nailed into place. They are delivered by Michael Flynn Co., completely assembled, including screens, hardware and glass and ready to be set in.

FIG. IX—CONCEALED COPPER FIN RADIATORS are installed (below). Insulation consists of sheet steel forced between the studs.



unloaded from the truck it is piled so that the pieces first needed are on top. A braced balloon-type construction with 4 by 4 corner posts is used. The corner posts as well as the studding two stories in height are notched out on the power saw. After floor joists and bridging have been placed and the corner posts put up, the first item erected is the steel ribbon with stud spacers (see Fig. X). From this point on, studding and other framing members are quickly handed up and nailed into place. The writer observed the completion of a roof in which the rafters had been precut on the power saw and can testify to the remarkable speed and accuracy with which the members were assembled.

As the houses reach various stages of construction, the foreman reports to the order department, and materials needed in the next stage are delivered to the site. They are checked in at the gate and the sizes, colors and other details rechecked by telephone against the plans in the job office.

Complete Window Assemblies

Steel windows on the Clairton project come to the job completely assembled with both interior and exterior porcelain enamel trim applied. The trim comes in attractive colors blending with well-worked out color schemes. The windows, manufactured by Michael Flynn Company of Philadelphia, are supplied with a 2 x 4 wood enclosure, as detailed on page 46, which is easily toenailed to adjacent studding.

Door bucks, both interior and exterior, are also of steel and are complete with porcelain enamel trim and half-section butts welded to the frame. They are manufactured by Overly Manufacturing Company, Greensburg, Pa. Stock wood doors are supplied by Wheeler Osgood Company.

Metal Trim and Shutters

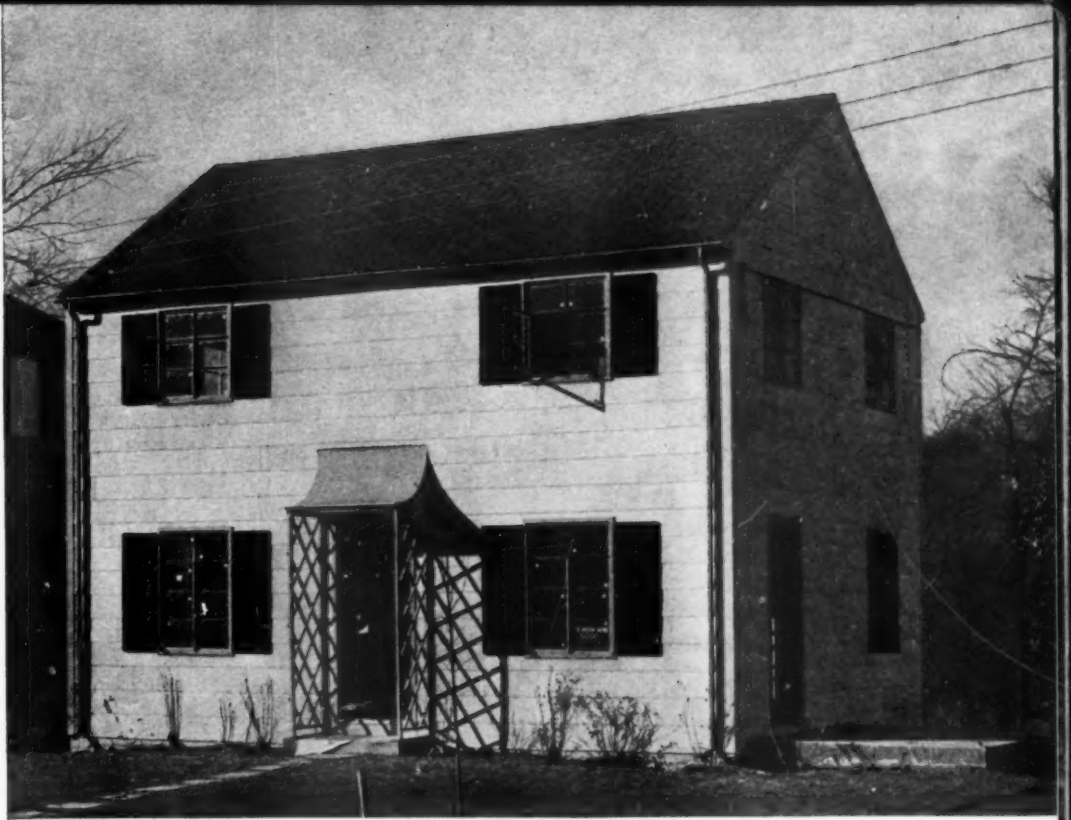
As part of the standardized plan of construction, Gilbert and Varker are using porcelain enamel exterior shutters, corner boards, rake pieces and cornices in a
(Continued to page 102)

FIG. X—FIRST STEP IN FRAMING is erection of 4 x 4 corner posts into which steel ribbon with stud spacers is notched and nailed. Steel ribbon and sill act as templates, insuring exact dimensions so that precut lumber and prefabricated steel units will fit in place exactly.

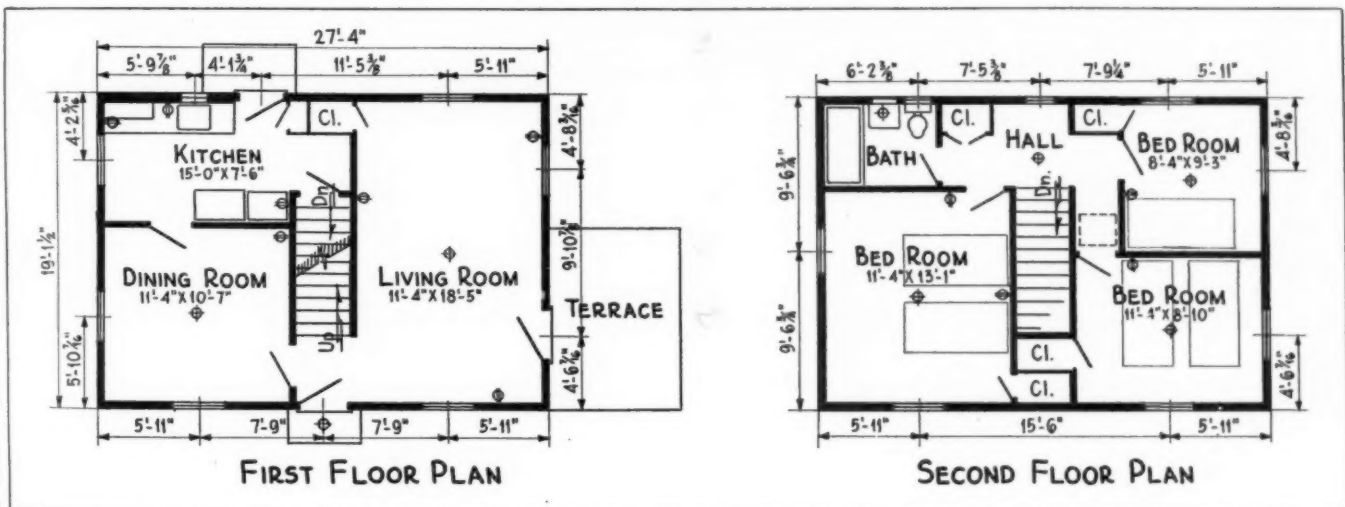


Cost-Reducing Planning and Construction

IN THIS Design Section, homes which feature added value through scientific planning, use of materials, or advanced construction methods are shown and described. Such houses as these will be important in the mass market of 1939.



TYPICAL 6-ROOM COLONIAL built by Gilbert and Varker at Clairton, Pa., with a center hall stairs, 11½' x 18½' living room, 3 bedrooms and bath.

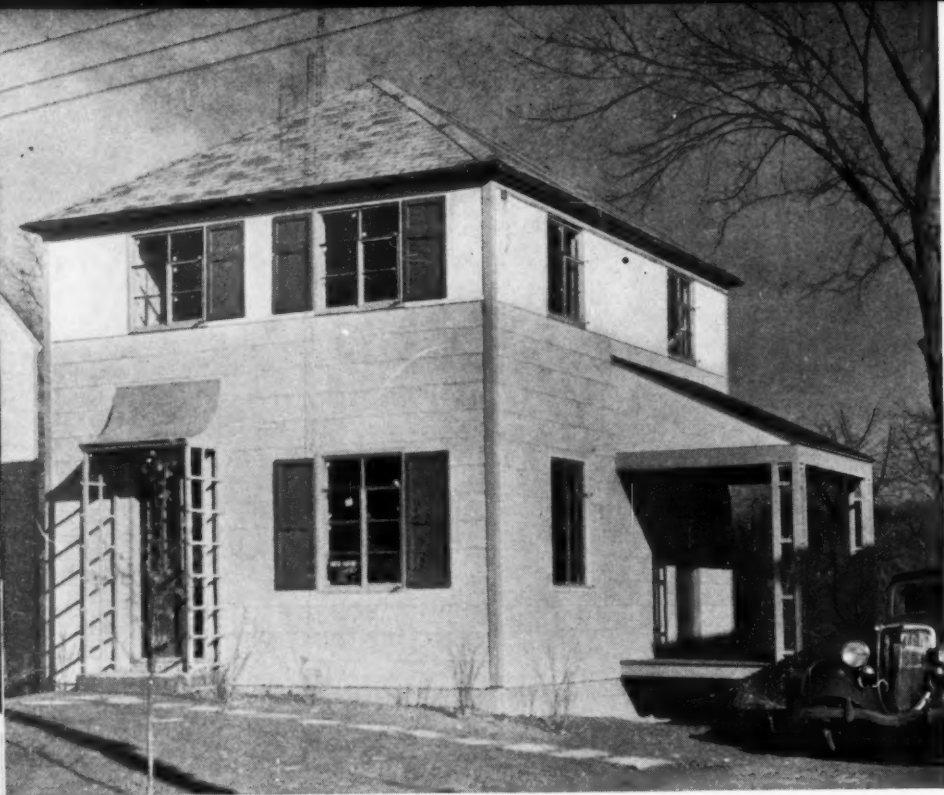


AMERICAN BUILDER
True Cost FIGURES
FOR THIS HOUSE
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RIGHT: Kitchens feature porcelain-enamel steel cabinet sink and kitchen cabinet, gas stove, linoleum floor and concealed copper fin-type of radiation.

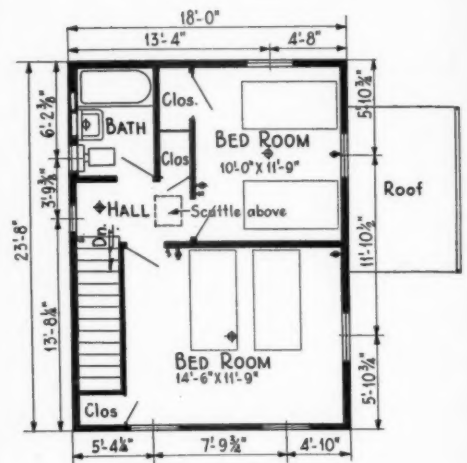
IN BATH, 18-gauge colored enamel steel panels are used on walls, along with enameled pressed steel tub and lavatory in very decorative and attractive colors.





Gilbert & Varker 5-Room House

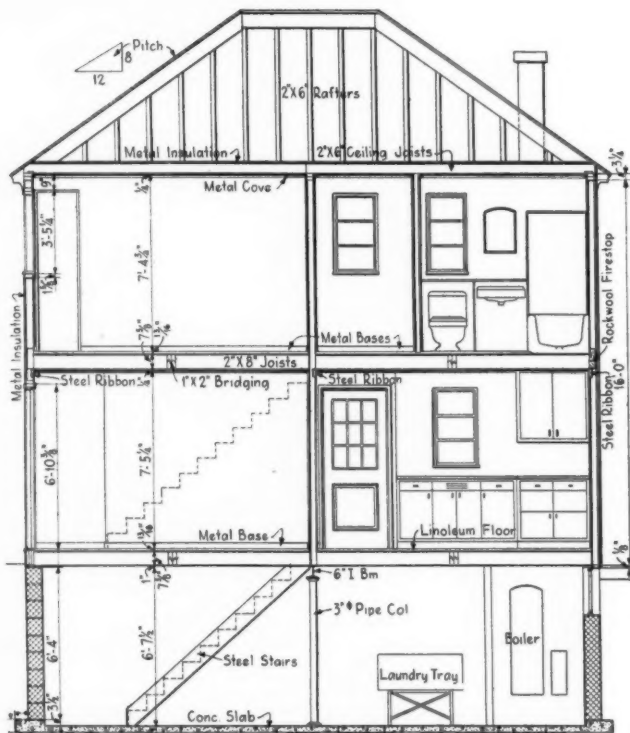
THIS 5-room Gilbert and Varker house at Clairton, Pa., has an overall size of 18' x 23' 8" as seen in plans at right. The balance of this article on the preceding four pages gives other particulars on this unique development which has attracted nation-wide interest.



SECOND FLOOR PLAN



FIRST FLOOR PLAN

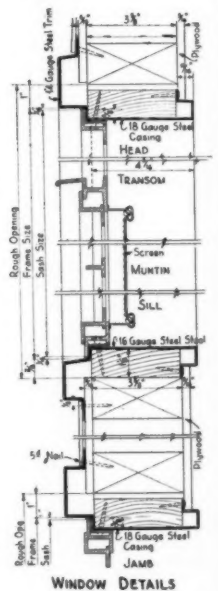


CROSS SECTION

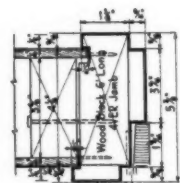
AMERICAN BUILDER
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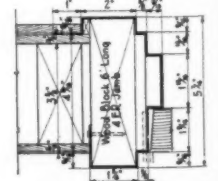
GILBERT AND VARKER HOUSES are detailed with engineering precision down to the location of all pipes, flues and equipment. Shown here are details of the steel door bucks and prefabricated windows with metal trim. Cross section at left shows steel stairs, closets and location of steel ribbons and sill plates.



WINDOW DETAILS



SECTION THRU HEAD AND JAMB
DOOR BUCK AND TRIM
FOR 3/4\"



SECTION THRU HEAD AND JAMB
DOOR BUCK AND TRIM FOR EXTERIOR DOORS
FOR 3/4\"



ONE of the compact, 4-room basementless houses typical of the group shown on the front cover, in H & B Corporation development.

Low Cost Home in High Class Westchester

Haring & Blumenthal of Scarsdale, N.Y.,
Successfully Pioneer Unusual Project

THE unusual front cover view shows a group of low-cost houses as seen through the window of one of them. In a recent interview with Mr. Charles F. Haring, president of Haring & Blumenthal Corporation, Scarsdale, N.Y., *American Builder* uncovered an interesting story about how this firm successfully launched and completely sold out a low-cost housing project in Westchester County, N.Y., during the depths of the 1937-38 building slump. Westchester County is acknowledged to be one of the most exclusive communities in the East. Statistics show that there is more concentrated wealth in this comparatively small area than in any similar amount of acreage in the world. The latest real estate survey prices the average Westchester owner-occupied home at \$10,000 up. What Haring & Blumenthal demonstrated is now being successfully done by several other builders in Westchester—but they were the first to attempt to build homes to sell to what constitutes a startling minority in Westchester—the \$35-to-\$40-a-week man.

This \$35-to-\$40-a-week income earner includes civil and Postal employees, teachers, employees of utility companies, dairies and automotive firms, retail merchants, etc. These folks can afford to buy a \$5,000 to \$6,000 home. However, coming in daily contact, as they do, with the Westchester families who occupy the more pretentious and more modern homes, the lower income families have formed very definite opinions about the quality of homes they will buy. No matter how low the price, they cannot be induced to invest their savings and future income in houses built of inferior materials or lacking

(Continued to page 104)

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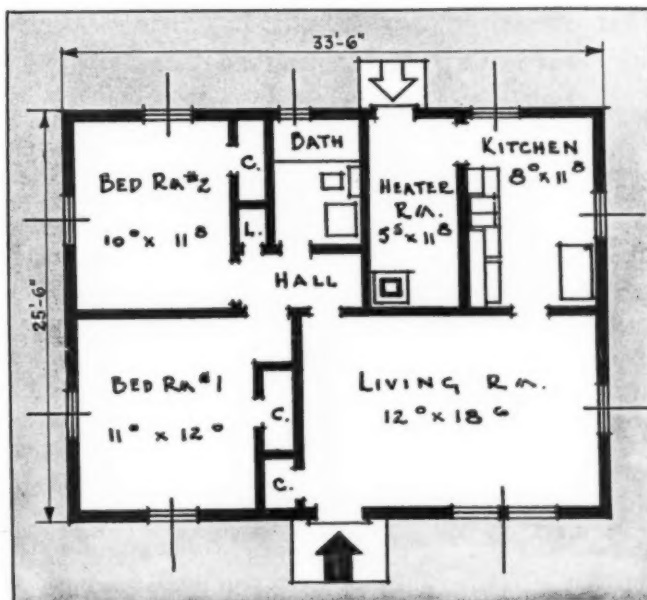




Photo by DUPREZ

IN ADDITION to the practical and well laid out downstairs, there is space above for 2 additional rooms in this Long Island prize winner.

Borough of Queens Prize Winner

AMERICAN BUILDER
The Cost FIGURES
FOR THIS HOUSE
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"Home of Today" at Bellerose Manor, L. I., Gets Architectural Award in County Where More Homes Are Built than Any in U. S.

IN THE Borough of Queens adjacent to New York City, a more concentrated volume of home building takes place than in any similar area in the U. S. Because of this vast volume of home construction new ideas develop quickly and in many respects this county sets styles and precedents that are widely adopted elsewhere in the country.

For this reason the prize winning design shown above, built by the Bellerose Housing Corporation of which Max W. Gross is president, is significant. This little house, with an overall first floor dimension of only 26' by 29' 6", was awarded the first prize in the annual architectural competition of the Chamber of Commerce of the Borough of Queens for dwellings in the less than \$5,000 price class. It was designed by Architect Fred J. Burmeister and may be fairly considered a typical example of what the fastest building county in the U.S. considers

a practical, salable home in the popular price class.

President Gross of Bellerose Housing Corporation calls this house "The Home of Today" which is a pleasant antidote to some of the futuristic names and plans that have lately been getting much publicity.

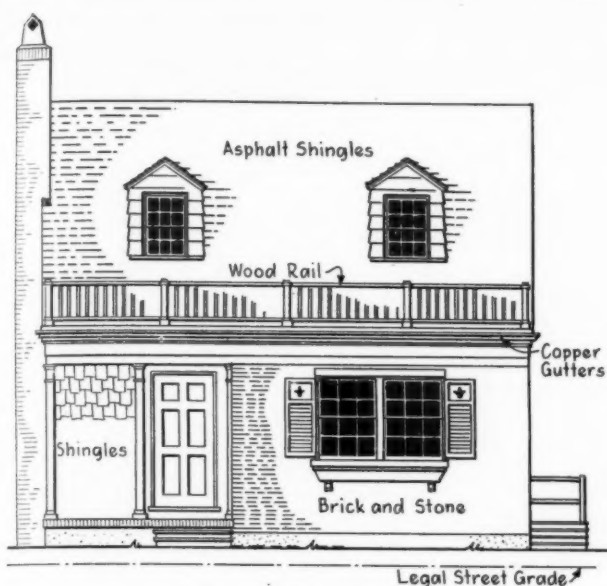
This is not the theoretical dream of some draftsman who has never designed a house that could be sold, but the practical, livable and salable result of years of experience in one of the most competitive home building areas.

Bellerose Housing Corporation has erected more than 400 homes in the Bellerose Manor community on Long Island in the past few years. Plans and early operations are now under way by Mr. Gross for 400 more dwellings in this section.

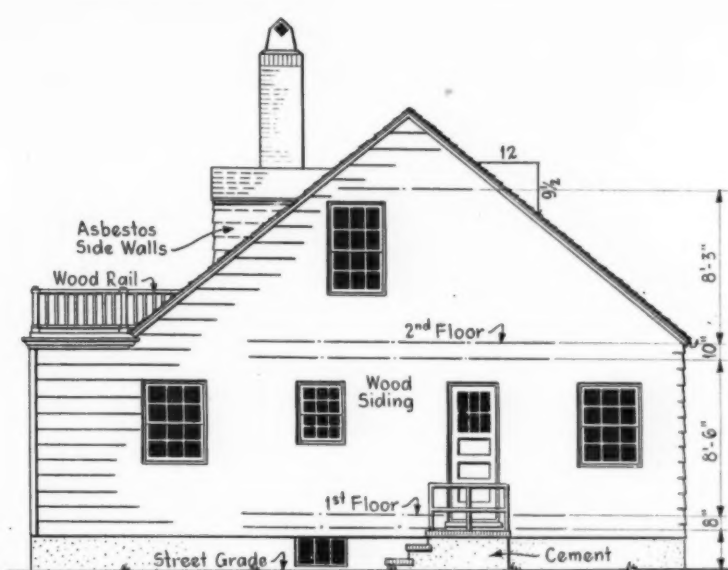
Architect Burmeister points out that in designing "The Home of Today," he was guided by popular public preferences.

"A recent poll of one-family house prospects," he explained, "resulted in an overwhelming vote in favor of an adaptation of the Cape Cod and Colonial types of architecture. Because of this, we incorporated these features in the Bellerose Manor homes.

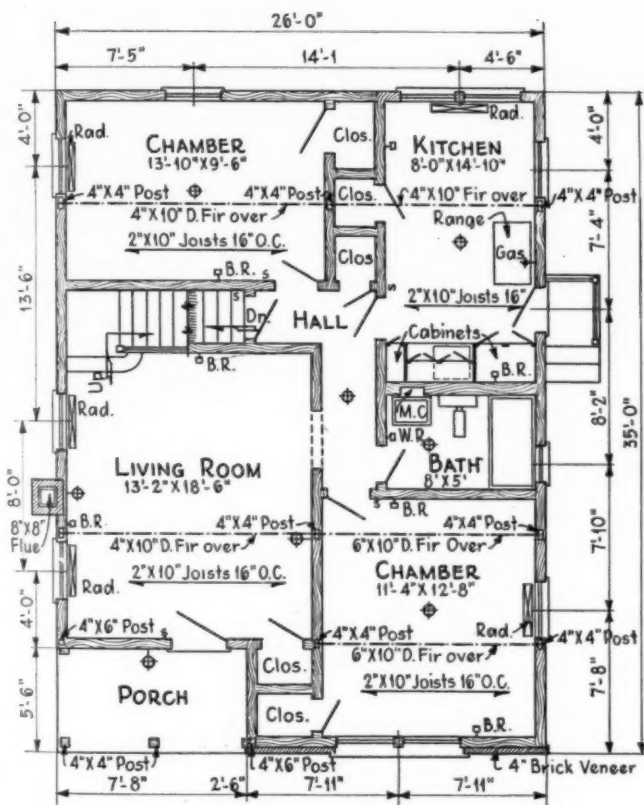
"These dwellings were designed to sell under \$5,000,



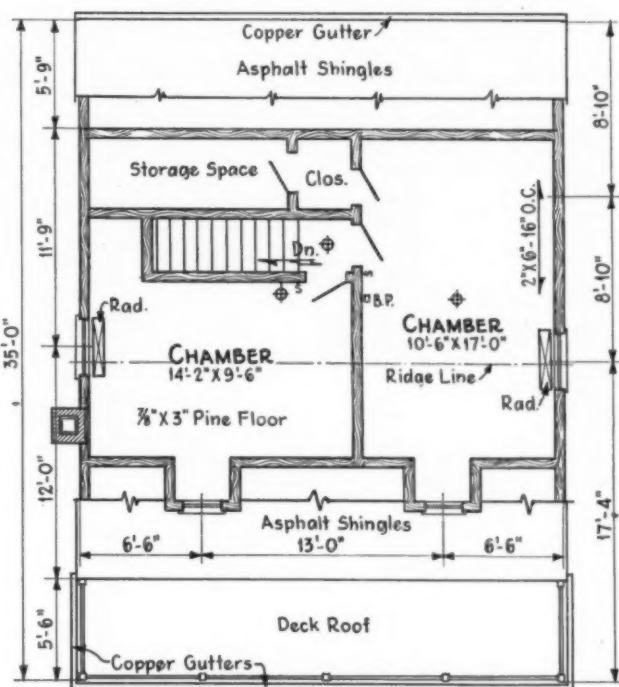
FRONT ELEVATION



SIDE ELEVATION



FIRST FLOOR PLAN



SECOND FLOOR PLAN

COMPACT, with an overall dimension of only 26' x 29' 6", this prize winning Bellerose Manor house provides 4 bedrooms—2 downstairs and 2 upstairs. The living room is approximately 13' x 15'. The kitchen-dinette is of good size and unusually well lighted with a large picture window. The plumbing layout for bath and kitchen is most economical.

complete and fully detached on a large plot of ground. They are all financed under the 25-year Federal Housing Administration plan which requires a down payment of 10 percent and total monthly payments of about \$35. Every plot is graded, seeded, landscaped and provided with sidewalks, curbs, public improvements such as sanitary sewers, paved streets, gas, water and electricity. A winding front walk leads to the authentically styled Colonial entrance under a roofed open porch.

"The Home of Today" comprises a spacious living room with open staircase, arch entrance to center foyer off which are two bedrooms, bathroom, kitchen and dinette. The large and airy kitchen with its adjoining

breakfast room is almost entirely surrounded by windows and is provided with a separate service door and stairway to basement. It is equipped with hanging dish closets, broom closet and utility cupboard. Its double wood floor is covered with Armstrong inlaid linoleum. The conveniently located bathroom has a built-in tub and shower surrounded by colored tile. The well ventilated, full height of basement is provided with a laundry, boiler room, storage and space for a large recreation room.

"The popularity of this type of home lies largely in the space available in the attic for two additional rooms without requiring structural changes in the house."



National Small Homes Demonstration for 1939

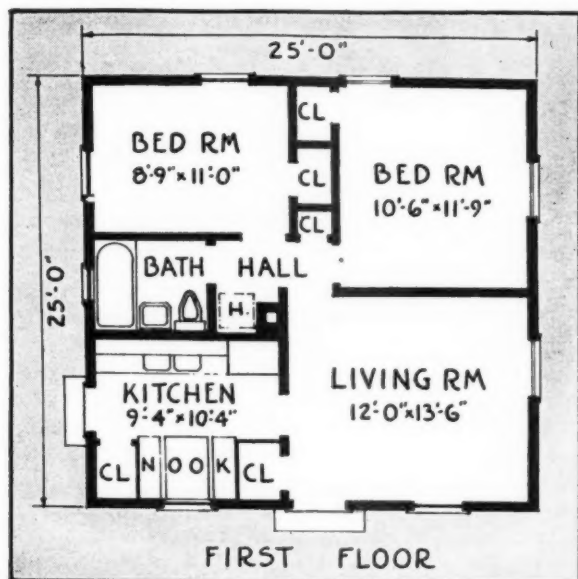
Two Master Plans with Twelve Exteriors Offered Builders and Dealers for Display

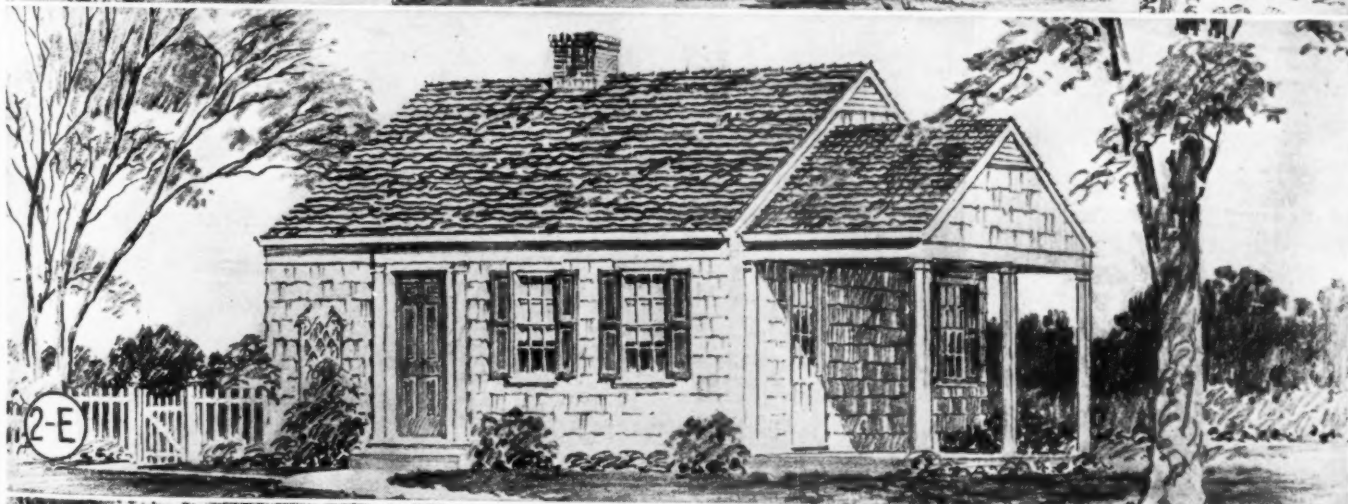
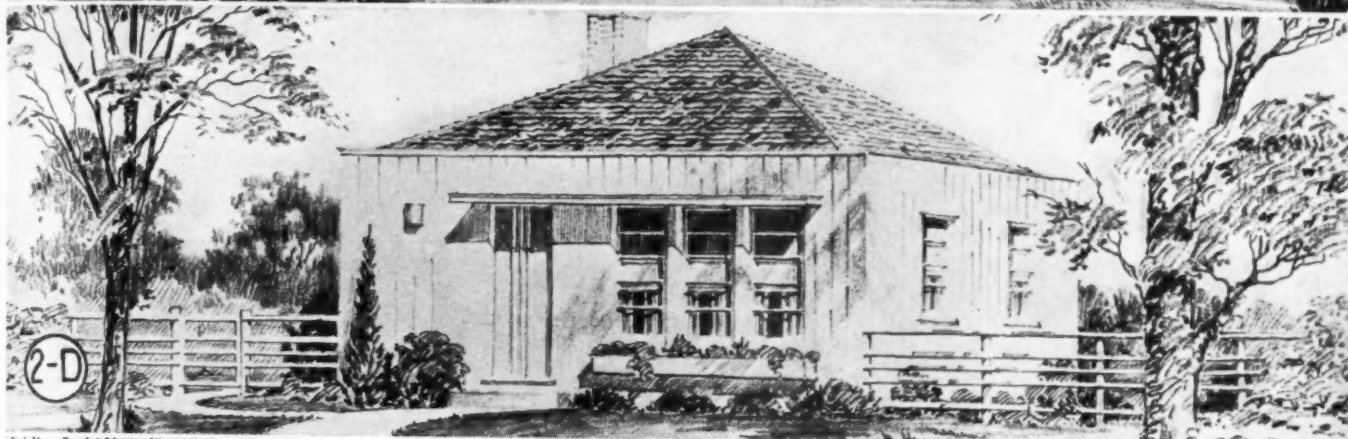
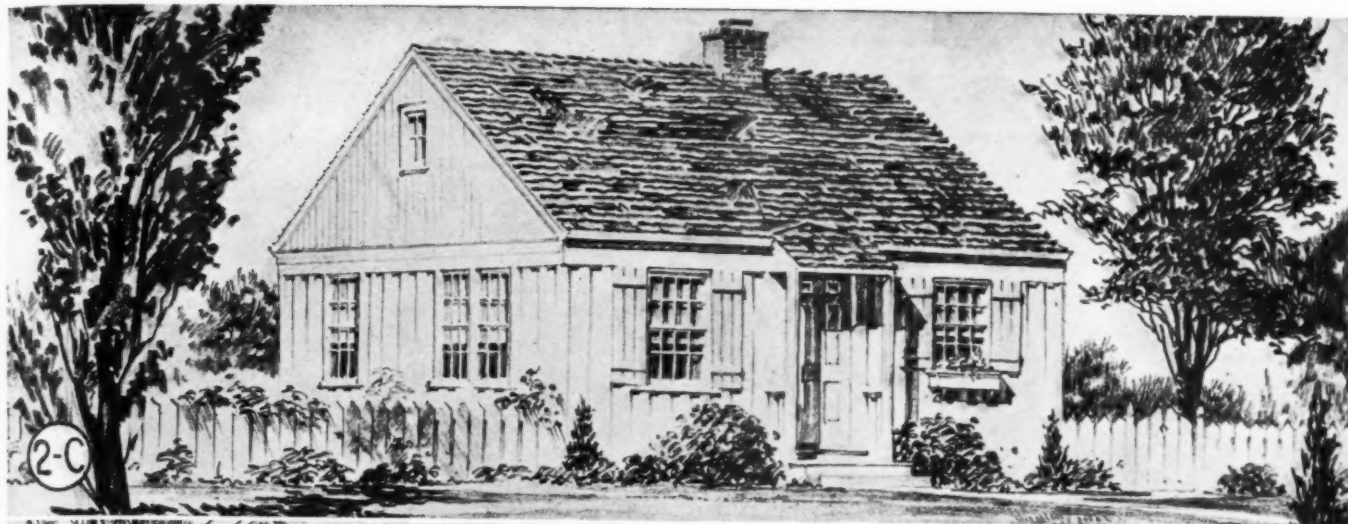
AGAIN the National Lumber Manufacturers Association has created a group of outstanding exterior designs which will be used with two master plans in the 1939 National Small Homes Demonstration. These attractive, economical designs are described as "the answer to a subdivider's prayer" in the search for practical, economical housing for the mass market during the coming year. The houses are

divided into two groups, as shown by the drawings on this and the three following pages. The first group carrying the figures 2-A to 2-F offers variations of four-room plan below; different types of styling and use of porches, garages and similar details give a group of six different appearing one-story houses. The second group, on the two pages following, provides variations for a two-story 5-room plan.

IN the 1939 National Small Homes Demonstration, the heating, electrical and plumbing industries are preparing to provide "package use units" for each of the two plans to allow further savings by means of standardization.

AMERICAN BUILDER
True Cost FIGURES
FOR THIS HOUSE
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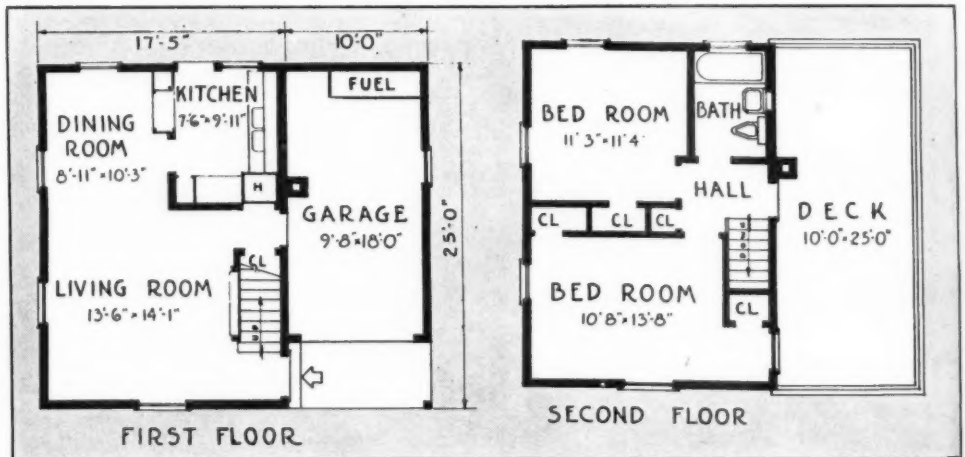


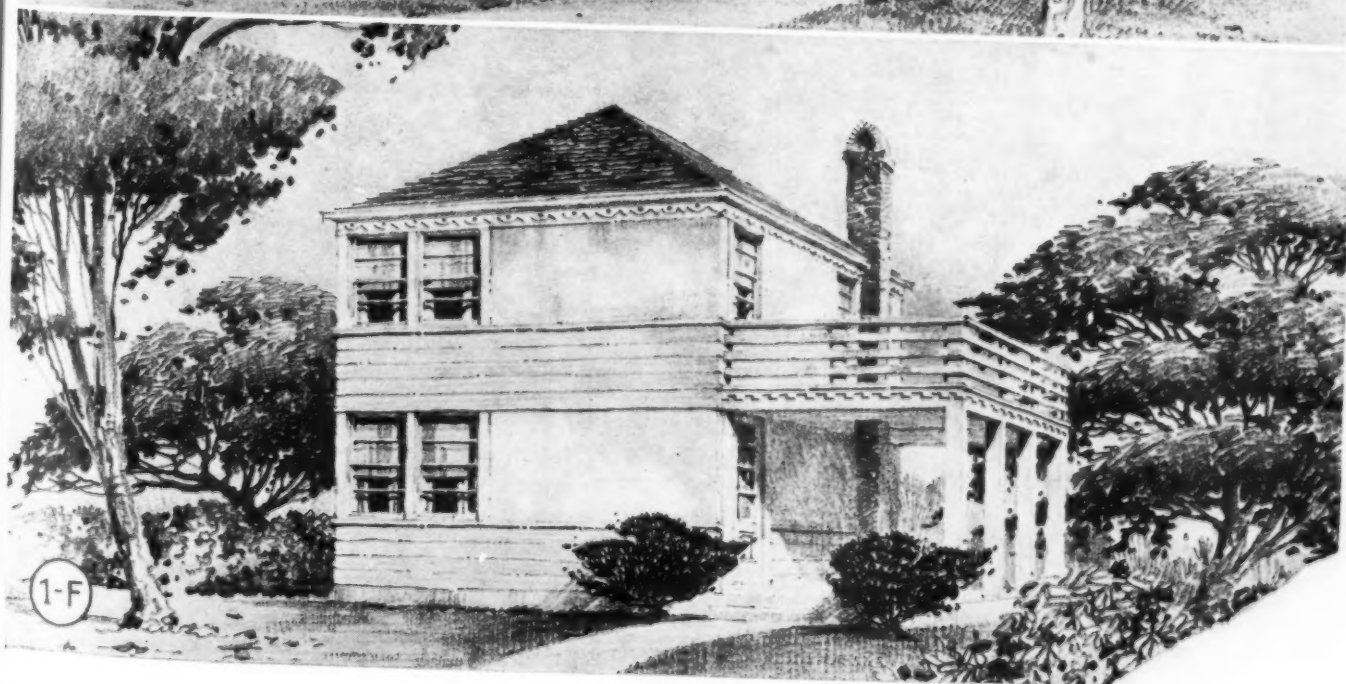
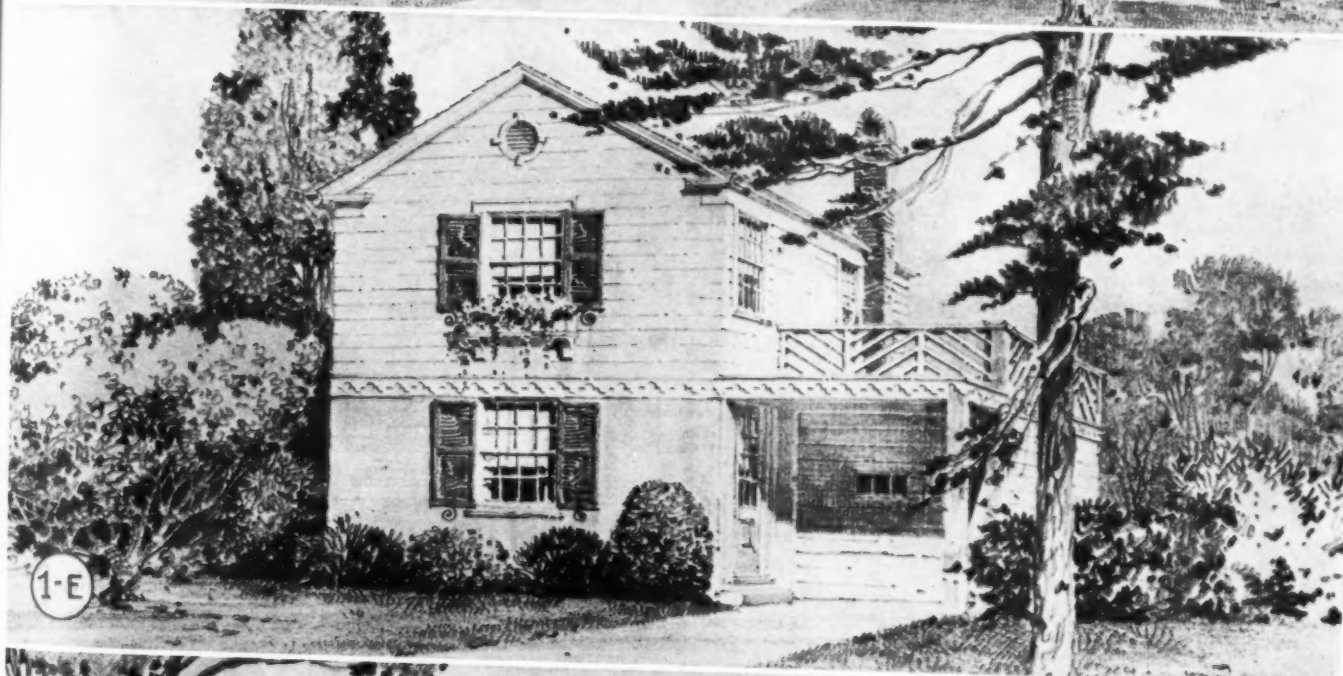
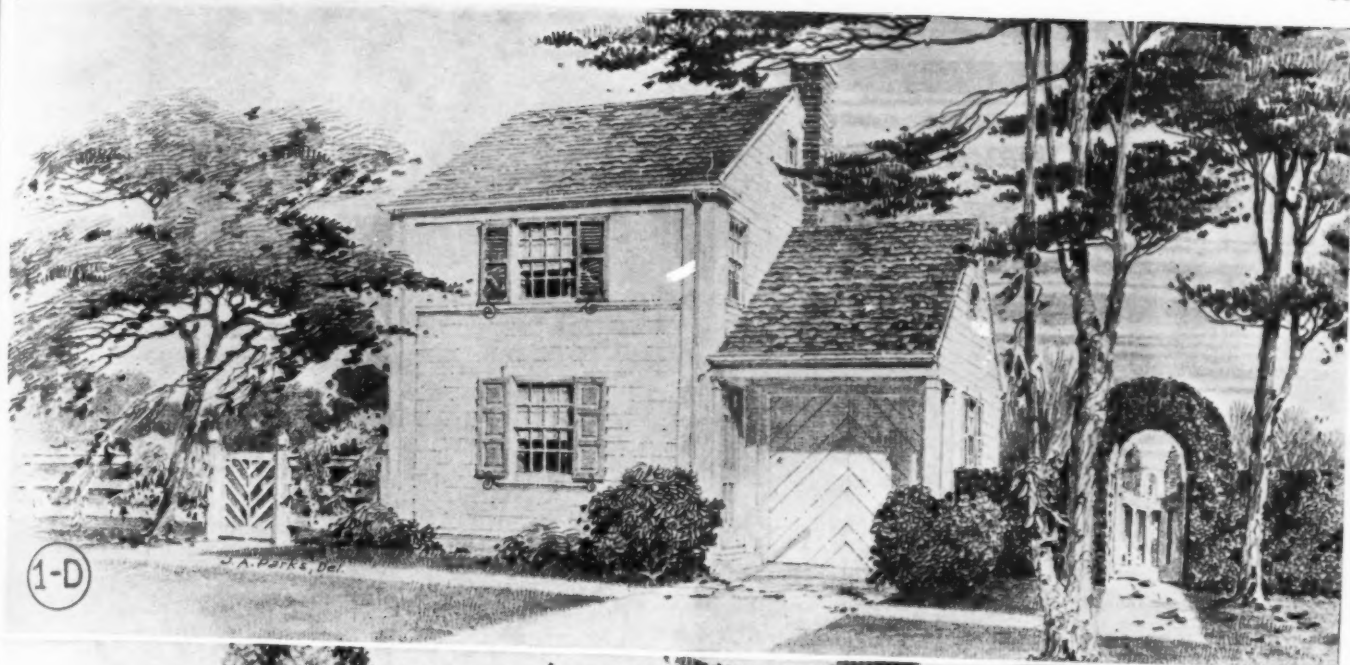


THE six exterior variations for the National Small Homes Demonstration two-story master plan are as carefully planned for economy and attractiveness as those for the one-story plan shown on the two preceding pages. Here again the variations are worked out by turning the plans and using different types of architectural features.

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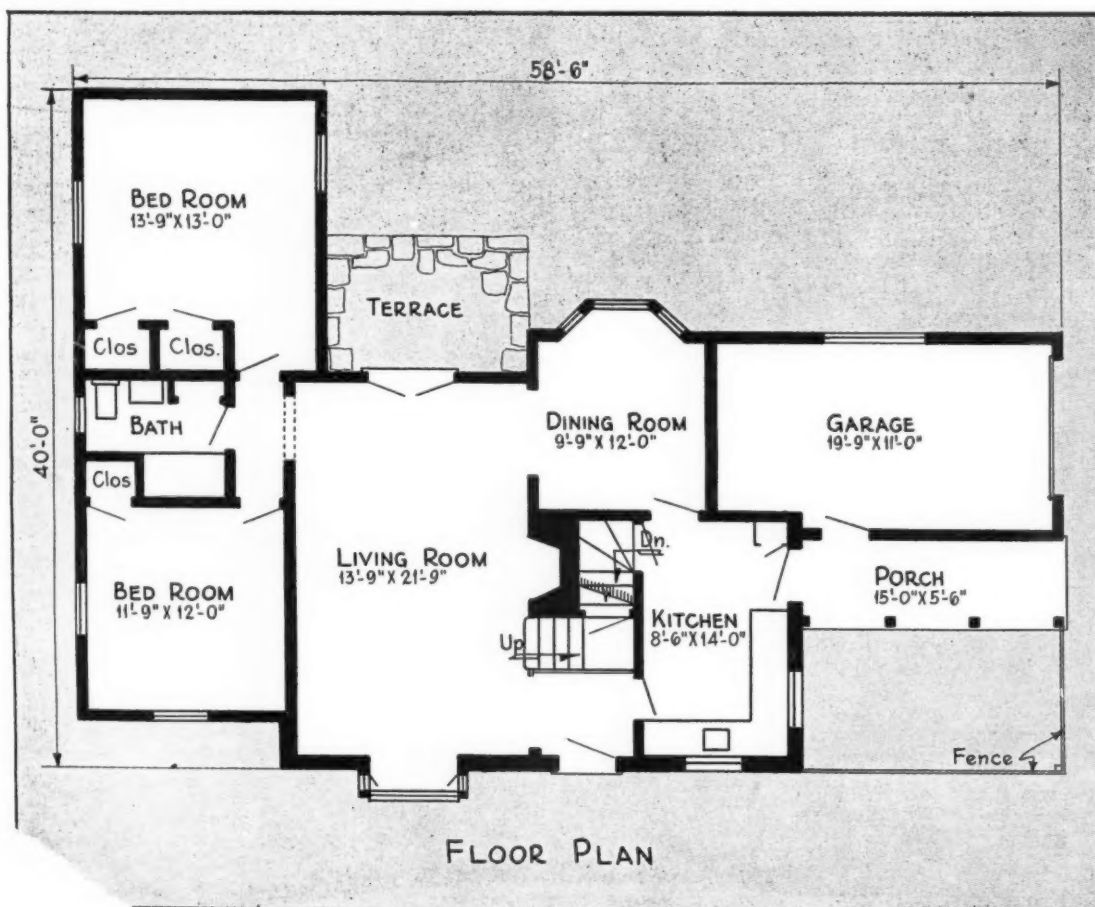


THE attractive Cape Cod cottage shown at the left built by Frank M. Howard in his Sunset Ridge development. Carries a 20-year FHA insured loan and features the following construction: Solid red face brick walls for the center portion; frame wings covered with Weyerhaeuser 5X prepped shingles over Sisalkraft paper on the shiplap. Roof is red cedar shingle. All side-walls are insulated with Balsam-Wool and ceilings with 4" of U.S.G. Rockwool. Interior finish is 3-coat plaster on U.S.G. Rocklath base.

FOR PLEASURABLE LIVING BEYOND CITY LIMITS

AROUND large metropolitan centers the desire for more generously sized building sites has led to an extensive construction volume beyond the limits and water and sewer mains. This fact, together with the frequent lower building costs, has opened up many new areas. Builder Frank M. Howard has just such a successful development under way near Wilmette and Glenview, Ill. Lack of city water and sewer facilities has been no drawback because, on the large 100-foot front lots, the installation of steel septic tanks, each with a 200-foot absorption field laid in gravel, properly provides for the one requirement; 185-foot deep

well systems equipped with 600-gallon steel storage tanks and Aeromotor deep well pumps take care of the water requirements for groups of six houses, at a cost to each owner of 30 cents per month for maintenance and current. A grease trap for the kitchen waste and a sump pump for basement drainage are accessory items. Other equipment includes Modern Steel Equipment kitchen cabinets with a Tracy sink, Standard plumbing fixtures, and Sunbeam gas-fired winter air conditioning system. With such equipment the modern country home can offer all the conveniences of improved city properties.



AMERICAN BUILDER
True Cost FIGURES
FOR THIS HOUSE
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EACH house in Builder Howard's development is individually and distinctively designed for convenient living. In the floor plan at the left the entrance stair hall opens directly into the large cross-ventilated living room. A door also leads directly to the efficiently arranged kitchen from this hall. French doors lead out onto a terrace which overlooks a fine view of the open country. Attached garage is reached from the rear entrance porch. Basement extends only under the center portion; second floor is left to be finished later.



A PLEASANT WINTER SCENE at Alden Estates at Port Chester, N. Y., featuring one of the popular 5-room and garage cottages. Four other homes selected from this development are shown with plans on pages 56, 57, 58, 59; garages are placed to take advantage of sites.

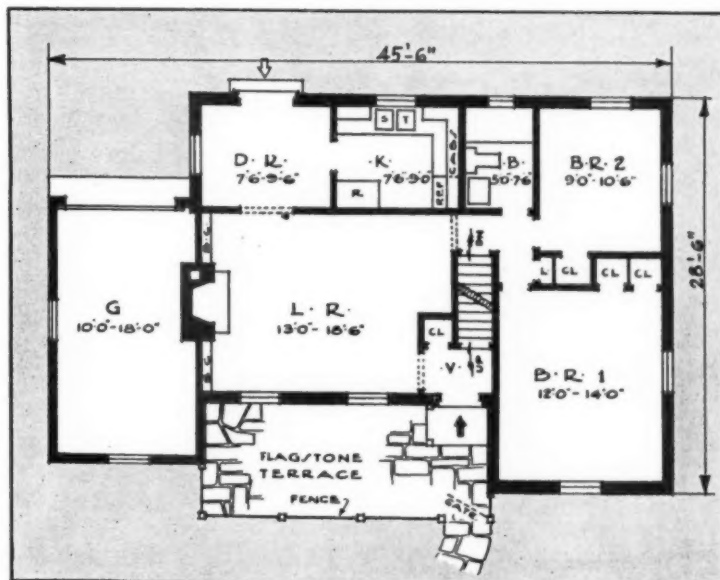
AMERICAN BUILDER
True Cost FIGURES
FOR THIS HOUSE
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COTTAGE TYPE CONCRETE HOMES SELL WELL

COTTAGE type homes featuring two or three bedrooms on the first floor, with a stair leading to the attic for future space, have proved especially popular at Alden Estates, a successful development located on the border between New York state and Connecticut. Under the energetic direction of John W. Fries some 50 houses, practically all of the cottage type, have been sold.

Fries is an active exponent of concrete construction and has adopted a uniform policy of using concrete for both walls and floors. Exterior walls above basement consist of two 4-in. walls of cinder concrete blocks with a 2-in. air space between. The two walls are tied together by special metal wall ties placed in every third course of blocks. Interior walls are finished in plaster, the plaster being applied directly upon the cinder blocks.

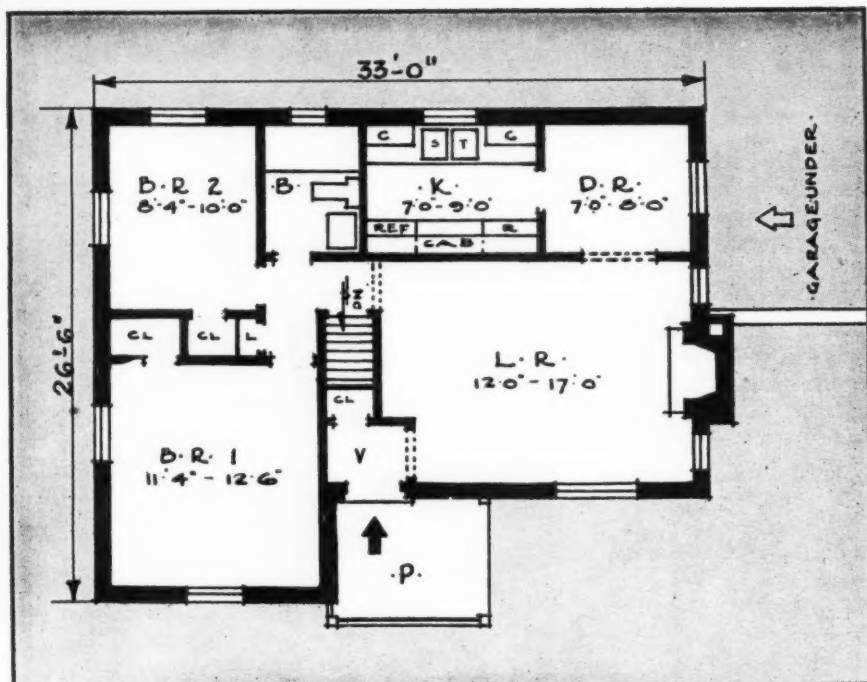
Floors of the Fries' houses consist of 3 by 8-in. reinforced concrete beams over which 2-in. cinder concrete slabs are placed. Over this 1½-in. of mesh-reinforced con-



THE general layout of these cottages follows the plan above. By comparing it with those on the following four pages it will be noticed that clever variations give different dining rooms, stairs and entrances.

crete is placed, with levels adjusted for either wood flooring or linoleum finish. All interior partitions are of cinder concrete blocks.

To complete this lifetime type of construction Fries uses U.S.G. Redtop insulation; Flintkote thick butt asphalt shingles; 16-oz. copper flashing, copper gutters and leaders; brass plumbing pipes throughout; Fenestra steel windows; concrete porches, steps and walks.

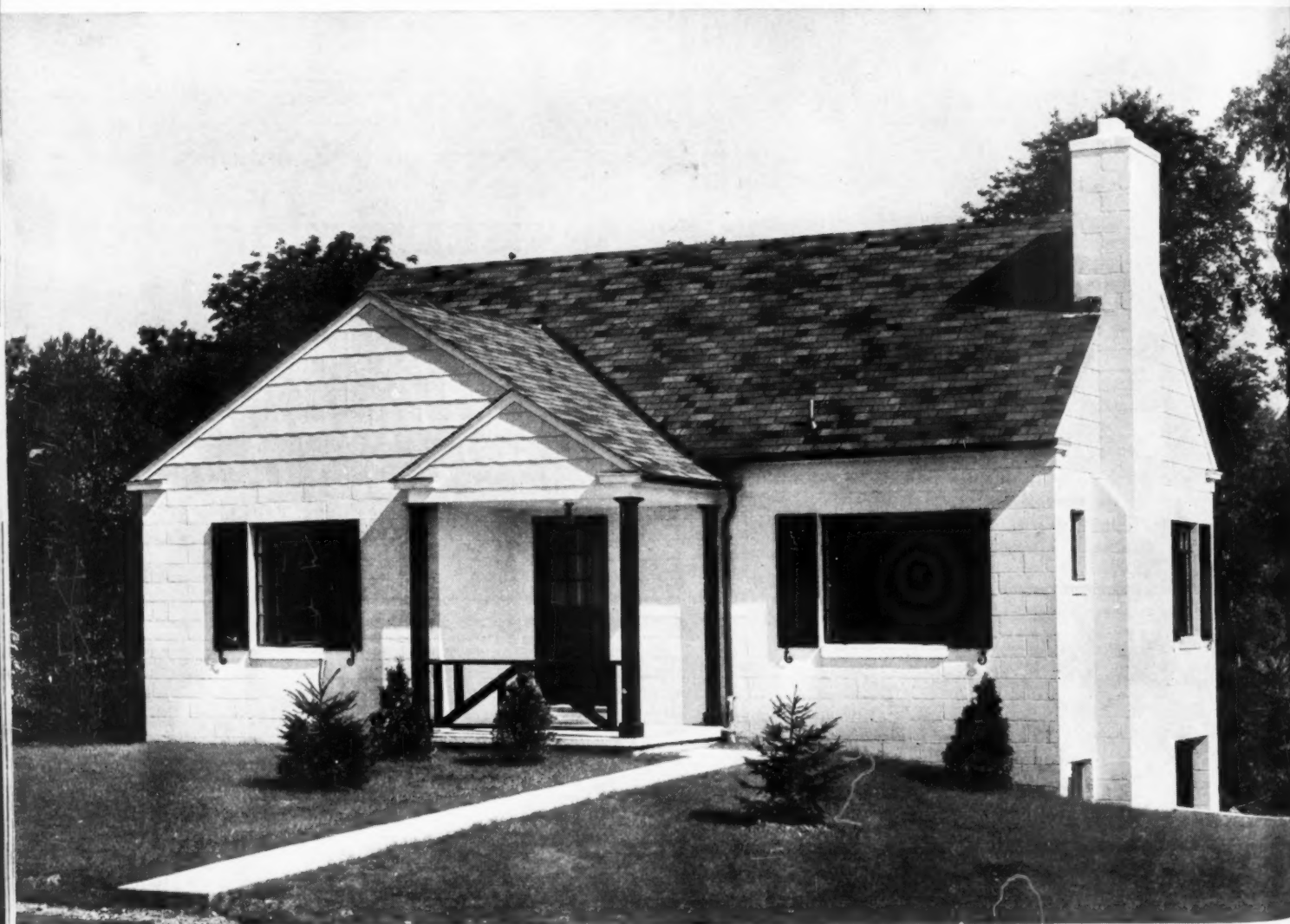


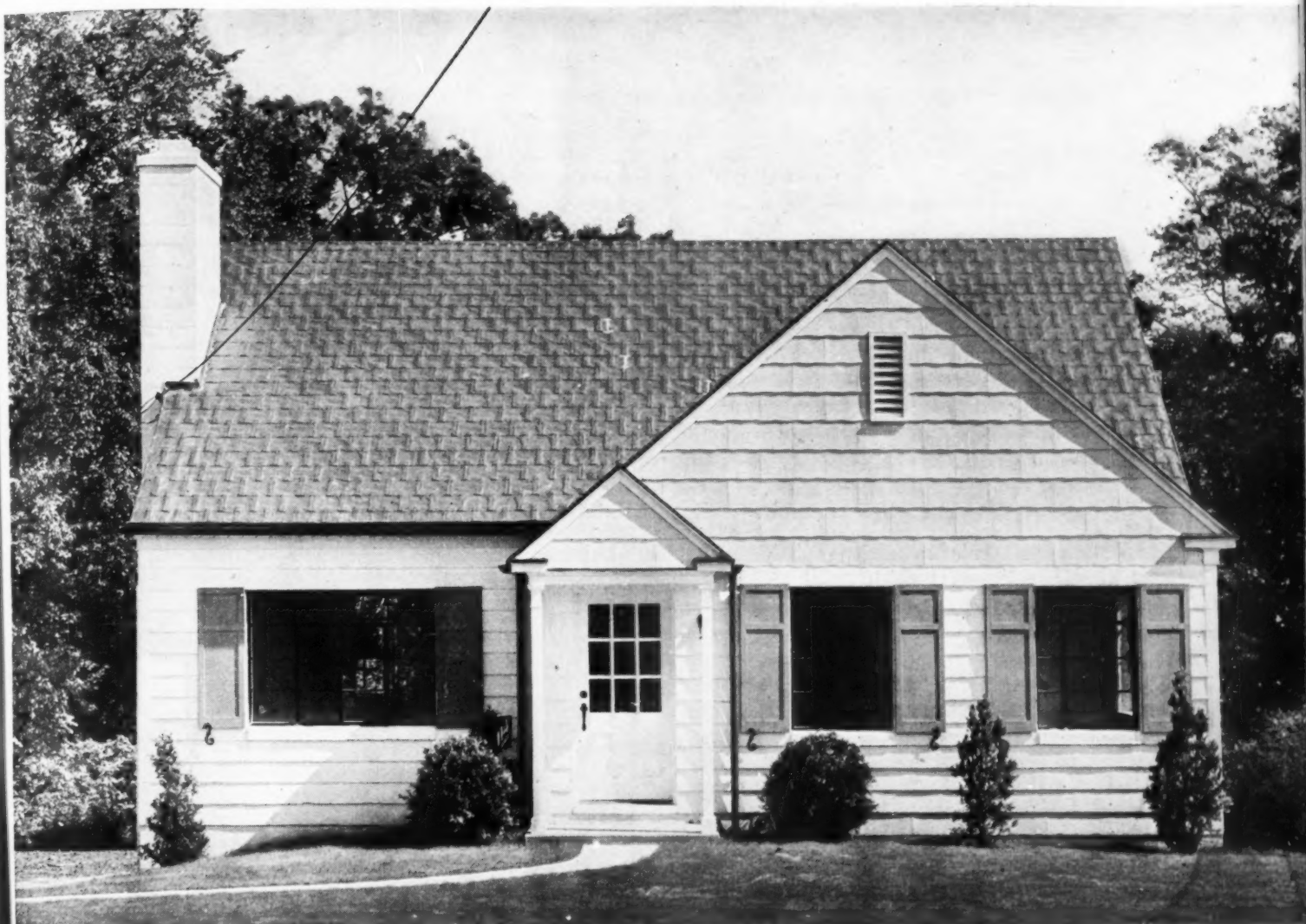
A COTTAGE TYPE HOUSE with 12 x 17 ft. living room and a compact arrangement of dining room, kitchen and bath. House is economical to frame, has good exposure.

AMERICAN BUILDER
The Costly FIGURES
FOR THESE HOUSES
ON PAGE
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WESTERN DESIGN GOOD IN EAST

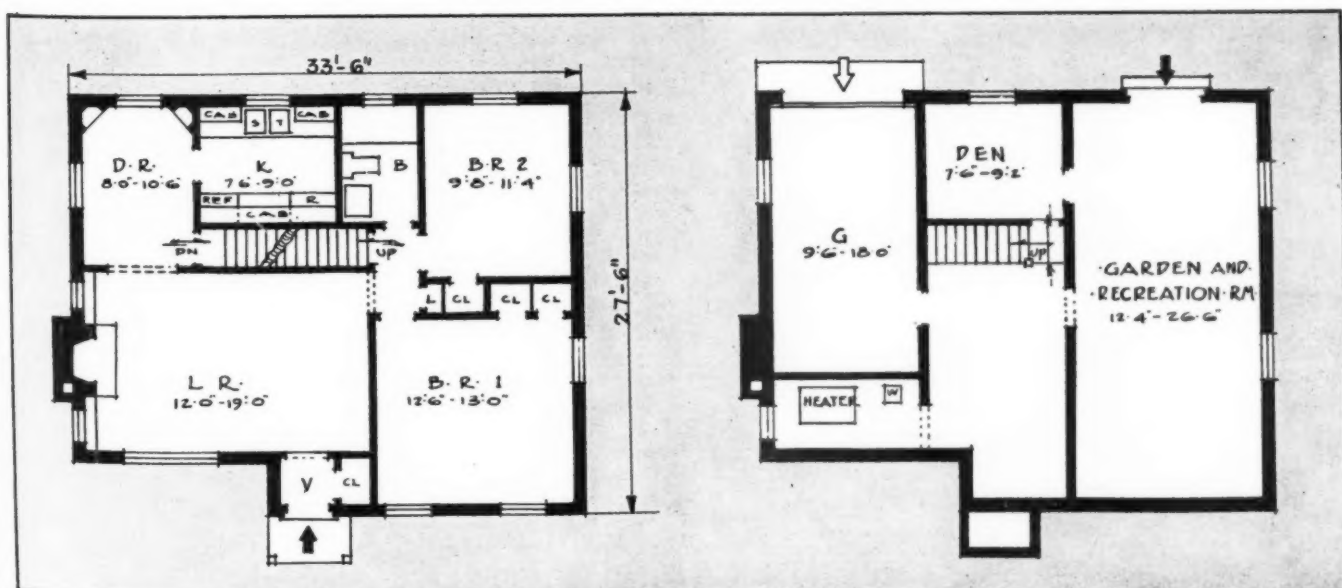
THERE IS A SUBSTANTIAL, comfortable look about this house built by John Fries in Port Chester, N. Y., that would make it seem equally at home in Wisconsin or Iowa. The open porch is an attractive feature and blends in well with the roof line. Garage is located underneath the rear of the house. Walls are of two layers of concrete cinder blocks, and floors are also of cinder concrete.



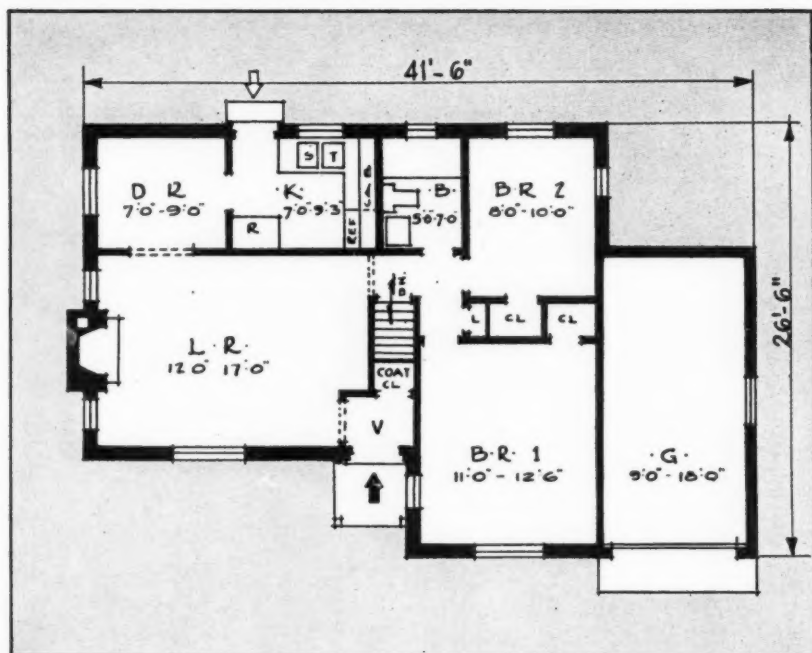


CONCRETE MASONRY SIDING

A NOVEL TYPE of cinder concrete block was used in this Alden Estates home at Port Chester, N. Y., which simulates the appearance of wide wood siding. The upper part of the gable is executed in asbestos cement siding. Basement area includes a garage, den and recreation room.



A COTTAGE THAT HUGS THE GROUND

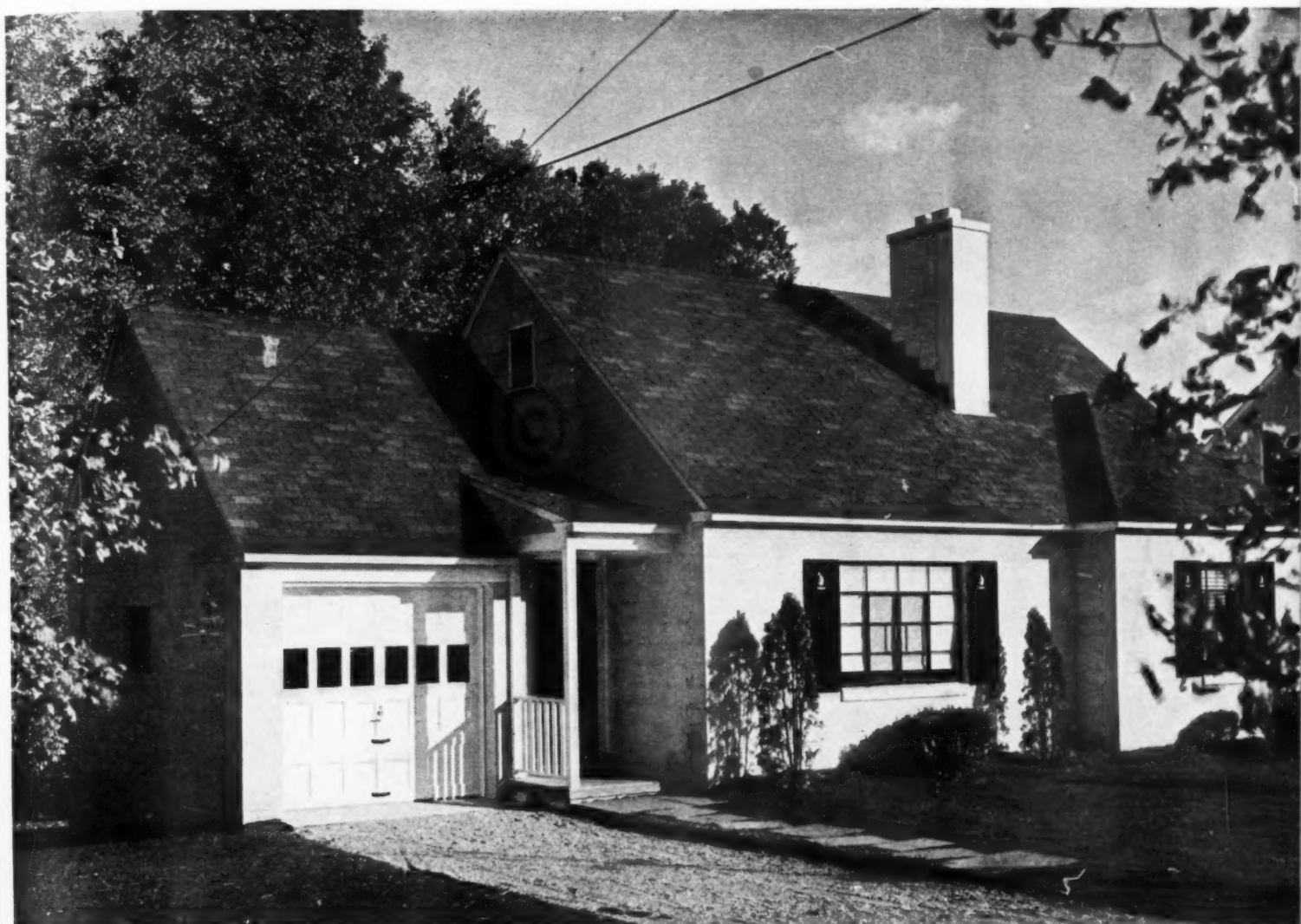


FIVE ROOMS and attached garage are provided, including a convenient coat closet at entry, 12 x 17 ft. living room, a small dining room, 2 good bedrooms and an economical arrangement of kitchen and bath.

THIS COMPACT MASONRY HOME in Alden Estates at Port Chester, N. Y., is designed for a sloping lot and fits into that lot in a particularly successful way. The attached garage is dropped to a lower level. Both floors and walls are of concrete, and chimney is built of cinder block units. Steel windows, a durable asphalt shingle roof and such other lifetime features as copper pipe and copper flashing assure that upkeep will be low.

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The Cost FIGURES
FOR THIS HOUSE
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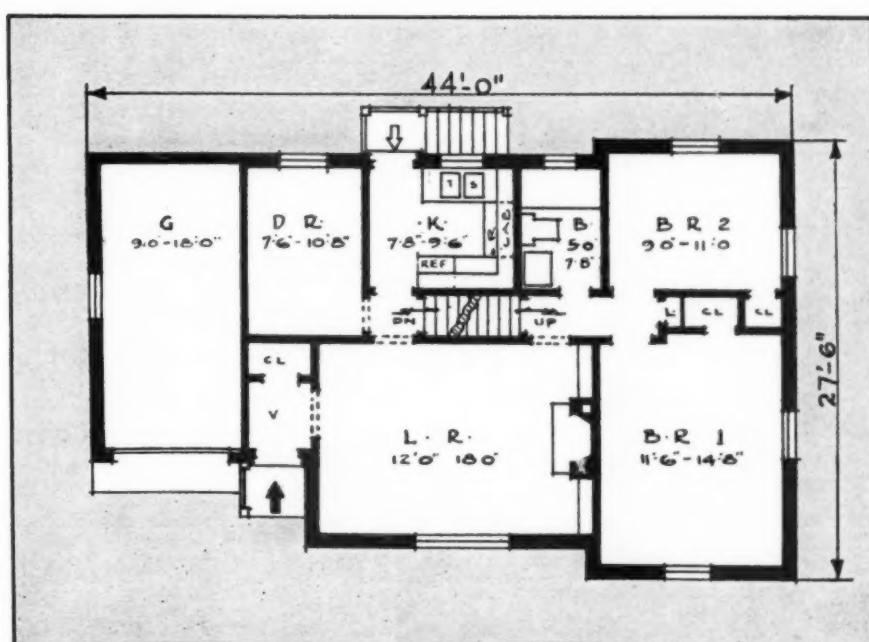


BUILT TO LAST FOR A LIFETIME

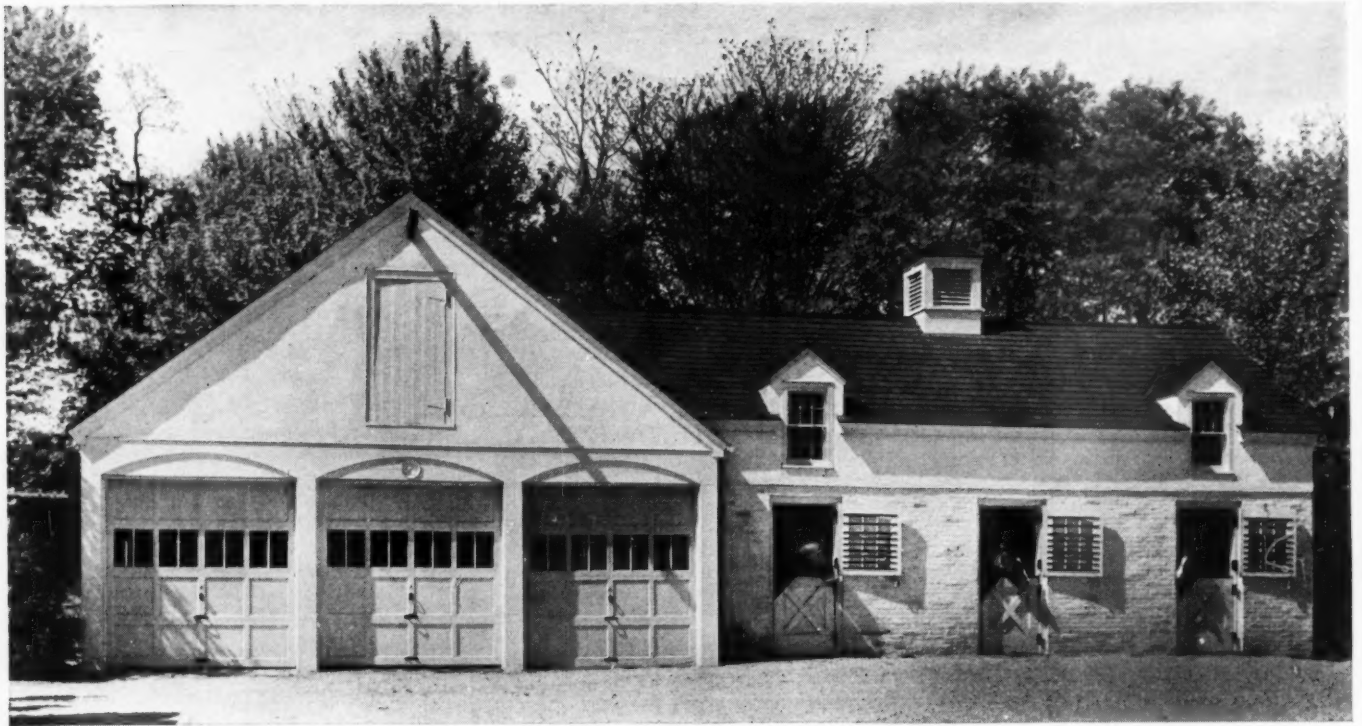
PERMANENT MATERIALS, including both concrete walls and floors are prominent selling arguments used by Builder John W. Fries in connection with his Alden Estates houses. One of the most popular is illustrated above, featuring a large living room, 2 downstairs bedrooms and stairs to the attic where there is space for additional rooms. Exterior wall finish is white portland cement paint.

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True Cost FIGURES
FOR THIS HOUSE
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A PRACTICAL PLAN with excellent circulation. Kitchen arrangement is good, featuring a "U"-shaped efficiency plan. Attic and basement stairs are incorporated with a minimum of waste space. Garage is convenient.



THREE HORSES, two cars and a pony cart are attractively housed in this building on the estate of H. G. Bergen at East Williston, L. I. General character of design would harmonize with any type of Colonial styling.

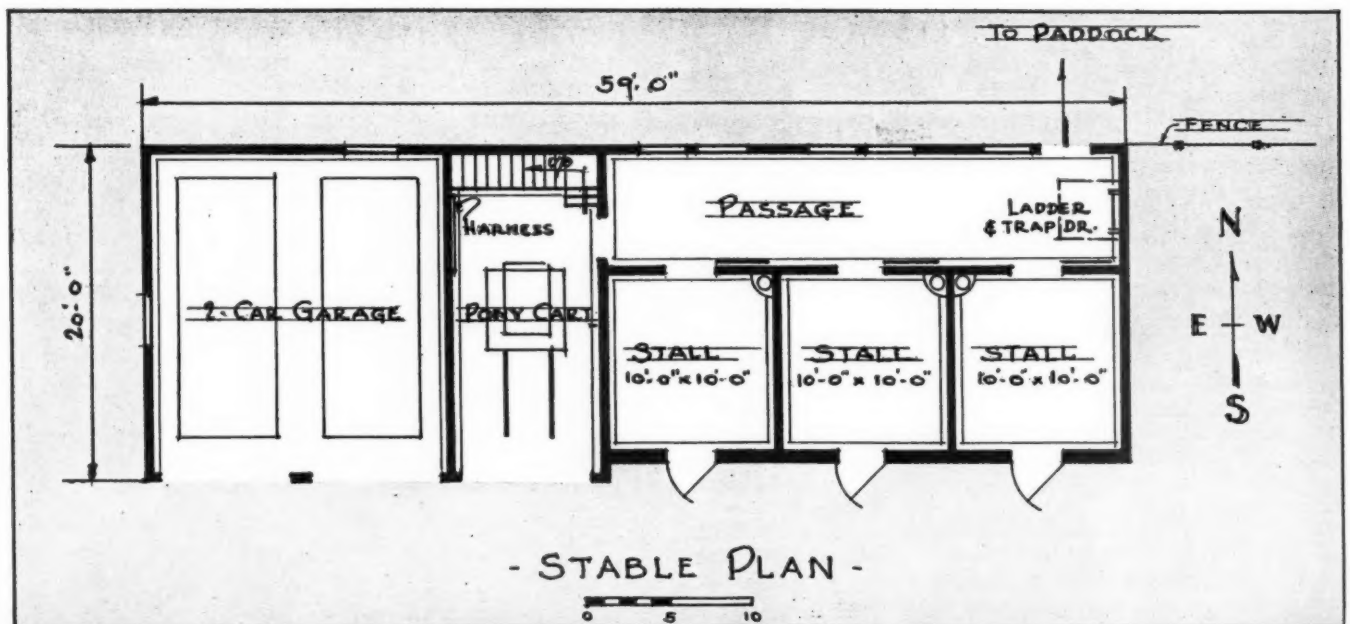
COMBINATION STABLE AND GARAGE

H. J. Reed Barrett, Architect

THIS ATTRACTIVE STRUCTURE forms one side of the entrance court to a Long Island estate. As the plan below shows there are a two-car garage with Overhead doors, a special "garage" for the pony cart, and three 10 by 10-foot horse stalls. Floors of the stalls provide perpetual drainage and are built of 2 feet of rock, 2 feet

of cinders, 4 inches of loam and 8 inches of peat moss.

There is a metal-lined grain storage room over the garage and hay storage provided over the stalls. Specifications include Curtis millwork, U.S.G. stucco, Creo-Dipt shingle roof, Curtis Protectovent sash, providing for winter ventilation.



ProCost
Reg. U.S. Pat. Off.

Figures for American Builder Homes

HOME DESIGNS ON PAGES AS NUMBERED

Unit of Construction	Feb., 45	Feb., 46	Feb., 47	Feb., 48	Feb., 50	Feb., 52
Basement Walls, lin. ft.	93	83	118	122	100	185
Trench Walls, lin. ft.	0	24	0	16	0	39
Basement Floor, sq. ft.	524	426	846	853	625	437
Garage Floor, sq. ft.	0	0	0	0	0	250
Excavation per ft. deep cu. yd.	23	21	36	37	27	22
HoltRate on following items	1.133	1.024	.913	1.372	.745	1.134
Outside Walls, square.	18.5	15.4	13.0	17.1	11.1	18.3
First Floor, squares	5.2	4.3	8.5	8.5	6.3	4.4
Second Floor, with Fin. Flg., sqs.	5.2	4.3	0	4.7	0	4.4
Second Floor, without Fin. Flg., sqs.	0	0	0	3.8	0	0
Ceiling, sqs.	5.2	4.3	8.5	8.5	6.3	6.9
Roof Pitch, inches rise per ft. run	8"	8"	8"	10"	6"	10"
Roof, squares	6.9	5.6	10.2	12.3	7.6	9.0
Hips and Valleys, lin. ft.	0	56	0	16	0	0
Cornice, type and lin. ft.	C & F-104	C & F-87	C & F-128	C & F-176	C & F-110	C & F-145
Cornice, type and lin. ft.	0	0	0	0	0	0
Partition, lin. ft.	128	98	113	157	78	107
Inside Finish OS Walls, lin. ft.	186	167	118	170	100	190
Front and OS French Doors, opgs.	2	2	1	1	1	2
Rear and Grade Doors, opgs.	1	1	1	1	1	1
Garage Doors 8' wide	0	0	0	0	0	1
Inside Doors and Cased Opgs., opgs.	12	11	10	15	10	10
Windows and Casements, opgs.	15	12	10	15	8	12
Gable Sash and Louvers, opgs.	0	0	2	0	2	2
Chimney, lin. ft.	34	33	26	32	25	34
Main Stairs	1	1	0	1	0	1
Porch Floor, sqs.	0	.7	0	.8	0	0
Porch Ceiling, sqs.	0	.7	0	.6	0	0
Porch Beam, lin. ft.	0	24	0	16	0	0
Porch and Balcony Post and Newels, number	(b)	6	0	9	0	1
Porch Roof, sqs.	(b)	.9	0	(a)	0	(a)
Porch Cornice, lin. ft.	0	26	0	(a)	0	(a)
Porch and Deck Rail, lin. ft.	0	0	0	38	0	45

HOME DESIGNS ON PAGES AS NUMBERED

Unit of Construction	Feb., 54	Feb., 55	Feb., 56	Feb., 57	Feb., 58	Feb., 59
Basement Walls, lin. ft.	175	128	119	122	118	143
Trench Walls, lin. ft.	80	42	15	0	46	39
Basement Floor, sq. ft.	1251	880	764	866	749	916
Garage Floor, sq. ft.	234	190	0	0	190	190
Excavation per ft. deep, cu. yds.	59	40	34	36	36	43
HoltRate on following items	1.606	1.193	.935	1.064	1.062	1.165
Outside Walls, square.	23.1	18.1	13.6	15.4	15.3	16.3
First Floor, squares	12.5	8.8	7.6	8.7	7.5	9.2
Second Floor, with Fin. Flg., sqs.	0	0	0	0	0	0
Second Floor, without Fin. Flg., sqs.	0	0	0	0	0	0
Ceiling, sqs.	14.8	10.7	7.6	8.7	9.4	11.1
Roof Pitch, inches rise per ft. run	10"	10"	10"	10"	10"	10"
Roof, squares	23.1	15.2	10.8	12.4	13.3	15.7
Hips and Valleys, lin. ft.	36	34	24	32	24	42
Cornice, type and lin. ft.	C & F-240	C & F-208	C & F-144	C & F-182	C & F-182	C & F-178
Cornice, type and lin. ft.	0	0	0	0	0	0
Partition, lin. ft.	124	147	106	128	124	148
Inside Finish OS Walls, lin. ft.	205	156	119	122	136	143
Front and OS French Doors, opgs.	3	1	1	1	1	1
Rear and Grade Doors, opgs.	2	1	0	0	1	1
Garage Doors 8' wide	1	1	0	0	1	1
Inside Doors and Cased Opgs., opgs.	13	14	12	14	12	13
Windows and Casements, opgs.	14	11	10	13	11	10
Gable Sash and Louvers, opgs.	2	2	2	3	2	2
Chimney, lin. ft.	30	30	26	30	26	28
Main Stairs	1	0	0	0	0	0
Porch Floor, sqs.	1.8	0	.5	.2	.3	.2
Porch Ceiling, sqs.	1.8	0	.5	.2	.3	.2
Porch Beam, lin. ft.	39	0	15	13	10	8
Porch and Balcony Post and Newels, number	6	0	3	2	1	1
Porch Roof, sqs.	(a)	0	(a)	(a)	(a)	(a)
Porch Cornice, lin. ft.	(a)	0	(a)	(a)	(a)	(a)
Porch and Deck Rail, lin. ft.	0	0	8	0	0	0

(a)—Included with main roof and cornice.

(b)—Omitted in HoltRate on account of being so special.

Necessary Home Equipment, Fixtures, Accessories, Extras

Since the above surveyed items cover only the actual superstructure of the house, you should figure and add the following items as specified or wanted (and don't forget Overhead and Profit):

Areaways, Cellar Sash, Coal Chute, Basement Partitions & Doors, Attic Flooring, Attic Stairs, Blinds, Gutters & Downspouts, Fireplaces,

Built-in Cabinets, Rail & Newels for Stairs and Stair Well, Beamed Ceiling, Weatherstrips, Tile Work, Plumbing, Heating & Air Conditioning, Lighting, Terraces, Patio Walls or Fences, Sidewalks including Porch Steps, Driveways, Unattached Garages. Also add for painting and decorating if not included in Unit Costs.

What Is *TruCost* Estimating?

Basic Data Re-Explained

By A. W. HOLT

WHY is it that 93 percent of all contractors go broke in less than 20 years?

Haphazard, scatter-brain, lack-of-system estimating is almost invariably the answer because anyone who can anticipate his actual costs with any degree of accuracy will not go broke.

Nobody but a fool will submit a bid for constructing anything that is lower than he estimates his cost will be. It isn't the men, it's the hit-and-miss system that all too many use that breaks nine out of ten contractors in a decade or two.

There are several reasons for much-too-low bids, the first one being no "master sheet" or a blank form for extending each of the probable items of cost. Without this "summary" it is so easy to make a slip such as I recently witnessed while waiting to see a lumber dealer in California.

A contractor came in with a large roll of blueprints under his arm for a Court House. Unrolling it on the counter he had loose sheets of his scribbled list of various materials in the center, and he began sorting out the sheets that he wanted Mr. Lumberman to figure. After he had found them, he and the dealer began going over them. The other loose sheets of his estimate were lying there on the unrolled blueprint. A customer entered the front door as one of the truckdrivers came in from the yard, resulting in a draft that blew one of the loose sheets on the floor. As I was about to step over and pick it up I decided I'd not do so, and see if it was missed. It wasn't. As Mr. Contractor was about to leave, I called to him and gave him the missing sheet. He was as grateful as he was chagrined. In all probability he would have

failed to incorporate that portion of his "loose-leaf" estimate in his bid if I had not picked up that loose sheet.

Several months ago a Wisconsin lumberman told me that one of his best contractors scoffed at *TruCost* or anything resembling short-cut estimating, maintaining that "the only sure way is to count the pieces." Shortly afterwards he brought in a list of materials for a house he was about to bid on. Mr. Dealer asked if that list included everything in the line of materials for that proposed house. Mr. Contractor assured him that it did and that it was right because he had spent several evenings making the list. After transferring the list to his estimate book, figuring the board footage, pricing and extending each item, checking and double-checking, Mr. Dealer had his price for this presumably correct list. Then he checked with his own *TruCost* unit costs and found that *TruCost* was several hundred dollars higher. Checking the list again he found that Mr. Contractor did not have any insulation or paper listed and only half enough subfloor and finish flooring. Calling this to Mr. Contractor's attention, the answer was: "I know that I figured the insulation but I must have forgotten to put it down on this list and I must have forgotten to double the subflooring and finish flooring for the first floor so as to take care of that material for the upstairs."

It's the things one forgets or overlooks that breed trouble, as I have found from experience. Until I worked out my own unit system of estimating 20 years ago I missed many items that cost me money. After figuring "by the square" in four years of estimating for owners and contractors for a lumber firm that operated 36 branch yards, I was short only twice. In one case I added wrong so the total was \$100.00 high (and lost the sale for our Yard Manager) and the other time I failed specifically to specify certain materials; so, rather than have a fight with the owner, we followed Marshall Field's advice that "the customer is always right," and gave him the disputed items.

What Is The *TruCost* System?

It's no wonder the opening of bids is such a tense moment for all bidders. It's like waiting for a jury to bring in its verdict. All too often the winning bid carries a "fine"



"TRUCOST will help you to prevent making such errors as forgetting the second floor."

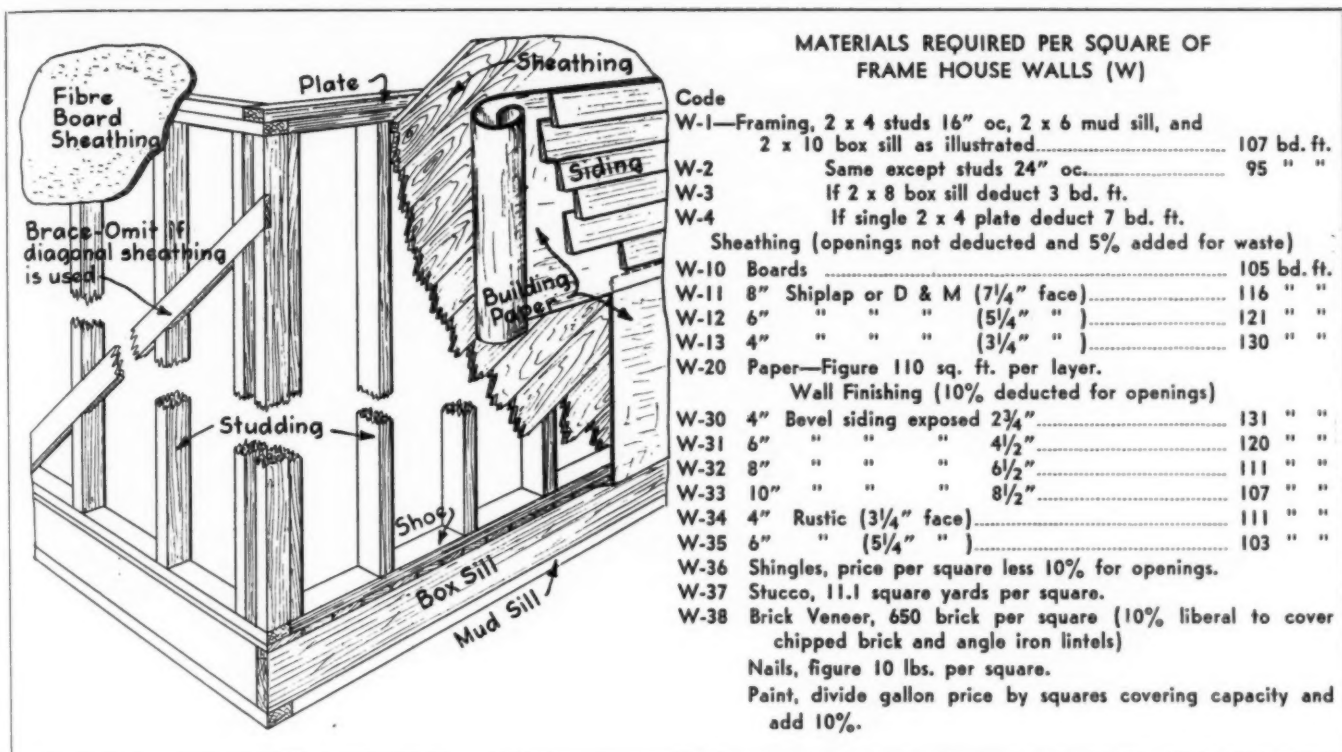


Fig. 1. These items are included in "Square of Outside Wall" in TruCost figures.

before the job is even started because of slipshod estimating methods due to the failure of estimators to adopt modern methods.

For nine months *TruCost* has been hitting 1.000% for a great many self-starting men as I have discovered personally in the 14 states I have traveled during that time. In other words, "The dadgum thing works." Of course, that was predetermined by 20 years of positive proof of my other systems which were improved upon to make *TruCost* the last word in modern estimating efficiency.

TruCost is based on actual surface of walls, floors, roofs and other "flat surfaces," linear feet of partition, cornices, etc., number of doors and windows. Such basic data must be ascertained before anyone can make out a detailed list of material. And this is exactly the information now given for each home design illustrated in *American Builder*. And any other plan can be *TruCosted* by simply figuring the surface or linear foot measurement thereof and multiplying each unit of construction by one's own local unit costs.

Two factors are involved when *TruCosting* any home design; one is constant and the other variable. The constant factor is the actual surface measurement; the variable factor is the labor cost of construction added to the local cost of the materials used. The first floor unit of a house 30 feet square has 900 sq. ft., or 9 squares of floor surface, regardless of whether it is built in Maine, Florida, California or Washington. But obviously, the labor and material cost-per-square-of-floor factor will be or may be different in each community of every state.

Nobody can sit in a swivel chair anywhere and give anyone the dollar cost per square for the various component units of a house. All that can be done accurately is to set down the basic information as shown in the accompanying tables.

Basic Tables and Diagrams Reprinted

For the benefit of the many new readers of *American Builder*, as well as the old standbys who may have overlooked or may have been dubious about *TruCost*, the basic

tables and diagrams for this quick estimating system are given here.

Refer to Figure 1 and note that it shows frame wall construction that is typical in southern as well as northern states since FHA laid down rules and regulations that put jerry builders everywhere on the run. The table in Figure 1 gives the board feet of materials required per square (100 sq. ft.) of actual wall surface.

After having the construction clearly in mind, note that each item of the *TruCost* table carries a code. This code is the "shorthand" that enables users of *TruCost* quickly and completely to record the specifications contemplated when estimating any job. Simply jotting down the three characters, "W-1," when *TruCosting* a home on a prospect's dining room table, serves the same purpose as the 40 characters of "2 x 4 studs 16" oc, 2 x 6 mud sills and 2 x 10 box sills." So this code is 13 times quicker for specifying wall framing, a very essential time-saving wheel of this efficient *TruCost* estimating "machine."

Instead of writing out all other specifications, all that it is necessary to do is to jot down the proper code letters and numbers. All code numbers 1 to 9 inclusive should be devoted to framing, 10 to 19 inclusive for sheathing, the 20's for paper, and 30 or more for wall covering. This same method of coding is used for floors, as shown in Fig. 3 and for roofs as shown in Fig. 4; K is the code for cornice as shown in Fig. 5 and P for partitions as in Fig. 6.

As already stated, the materials required per square will vary slightly between different crews because some workmen are more wasteful than others. But this cannot amount to enough to be of any consequence. What's 50 or 100 board feet of framing material on a house job? The quantities given are based on the average of a great many houses actually built; and builders have found them slightly liberal if anything.

Observe that sheathing material is based on no deduction for openings and that an addition of 5 per cent is made for waste, beside the allowance for matching. Wall surface is always given without any deduction for open-

OUTSIDE WALLS PRICE PER SQUARE GROSS SURFACE					
CODE	MATERIAL	BD. FT.	PRICE	AMOUNT	
1	FRAMING #1 Fir	107	50	5 35	
12	SHEATHING 6" #2 D & M	121	40	4 84	
20	PAPER Sumbrand, rolls	22	3 ⁰⁰	66	
31	OS WALL FINISH 1/2 x 6 #1 R.C.	120	55	6 60	
	NAILS	10	54	50	
2	PAINTING coats .44 gal.	350		1 54	
	MATERIAL PER SQUARE			19 49	
LABOR _____ HRS. @ _____					
CONTRACTOR'S O&P _____ %					
MATERIAL AND LABOR PER SQUARE					
ALTERNATE SPECIFICATIONS					
CODE	MATERIAL	BD. FT.	PRICE	AMOUNT	+ OR -
3	#2 Dim	104	45	4.68	-.67
11	8" #3 SL	116	36	4.18	-.66
32	3/4 x 8 #1 RC	111	90	9.99	+3.39
33	3/4 x 10 " "	103	96	9.89	+3.29
36	Dbl #3 RC		4 ⁰⁰		
	10" Exp #1 RC		5 ⁵⁰	4.30	-2.30
	Paint = Stain				
36	Same without stain			2.39	-3.84
	Asbestos Sgles	10 ⁰⁰		9.00	
	Paint			-1.54	+86
				7.46	
				-6.60	

FIG. 2. Typical page of local unit costs.
All prices shown are merely illustrative.

ings. If one wants to make any deduction, the best way is to reduce the price of windows or doors for the sheathing which each saves. This is usually not done, however, because this material is frequently used for bracing and scaffolding.

In the case of the wall finishing, 10 per cent was deducted for doors and window openings and also for the frieze which reduces the gross wall surface to be covered with siding, shingles, etc. A careful survey of a number of houses proved that the area of the door and window openings averaged about 16 percent of the gross wall surface; so a reduction of 10 percent still allows 6 per cent for waste. Just as tables that anyone may compile for himself, the quantities given for this and all other *TruCost* tables may be slightly liberal for some items and short for others, but the losses and gains usually offset each other and result in surprisingly close estimates.

Figure 2 illustrates how anyone may work out his own looseleaf cost book. The typed figures represent the constant factors and the script the variable price per 1,000 board feet and per square. These figures should be made with pencil so they can be changed with the fluctuations of material prices. Once one has set up his basic tables, it is but a few minutes' job to change prices. The entire page shown by Figure 2 required only 15 minutes to type and make ready for pricing and extending the prices per square. The code numbers refer to the basic table given in Figure 1, and a few minutes' study of these two tables should make this clear. Note the line provided for overhead and profit for contractors. This is variable, of course, but by including it in one's unit cost, it cannot be forgotten for the job. And that really is important.

The \$19.49 shown for Standard Specifications is basic and variations for alternate specifications are given below. For instance, code "32" for alternate specifications shows that 8" siding costs \$3.39 (shown as "+ \$66") more than \$19.49; so adding \$3.39 to the basic cost of \$19.49 gives \$22.88 per square. All prices given are arbitrary and have no relation whatsoever to material prices, even in the same community. It depends upon the proximity of raw materials; for instance there are places where brick veneer costs little or no more than siding. All prices are given for the purpose of explanation only and it is up to each user of *TruCost* to use his own local material prices and his own local wage scale.

MATERIALS REQUIRED PER SQUARE OF FIRST FLOORS FOR HOUSES (FF)

Framing, 16" oc as illustrated inc. 1 x 3 bridging

F-1	2 x 10 joists and 6 x 10 girders.....	195	bd. ft.
F-2	2 x 8 joists and 6 x 10 girders.....	166	" "
F-3	If 6 x 8 girder, deduct.....	5	" "

Subfloor (10% added for diagonal waste)

F-10	Boards.....	110	bd. ft.
F-11	8" Shiplap or D & M (7 1/4" face).....	121	" "
F-12	6" " " " (5 1/4" ").....	125	" "
F-13	4" " " " (3 1/4" ").....	135	" "

F-20 Paper—Figure 110 sq. ft. per layer.

Finish Flooring (10% deducted for walls and partitions.)

F-30	1 x 4 of 3 1/4" face.....	113	bd. ft.
F-31	1 x 3 of 2 1/4" ".....	120	" "
F-32	1 x 2 1/4 of 1 1/2" ".....	135	" "
F-33	2" of 1 1/2" ".....	120	" "

Nails, figure 10 lbs. per square

Finishing Floors, add as required

Note: Above also apply to Second Floor (SF) cost but add for finishing the joists for the ceiling below.

Fig. 3. These items are included in "Square of First Floor" in *TruCost* figures.

Labor Costs Are Local and Variable

Labor costs are not given by *TruCost* tables because of the great variety in equipment used, the number of homes built, whether various crews specialize in doing the same kind of work, as well as the human equation and weather conditions when building. Furthermore, it is foolhardy for anyone to submit a bid on a project without having records of his own actual labor costs. It is hoped that actual records may be given in the near future for various parts of the country from various builders. For the present, it is up to each one to work out his own labor costs or use various books that are available.

There are various methods for figuring labor but the method that seems to be most popular is to figure a certain number of hours per 1000 board feet of lumber, so many hours per opening of windows, outside doors, interior doors, and other opening units. To figure a certain percentage of material costs as the labor cost is all right if labor and material prices fluctuate correspondingly (which is seldom the case) and the same quality of materials are used. Obviously, it costs no more to lay the best flooring that may cost \$100 per thousand than the same size and kind of flooring which is of a cheaper grade and sells for \$60 per thousand. In fact, inferior grades of flooring are frequently twisted and warped so the cost to get any kind of a job is even greater than for the better grades.

All that anyone has to do to establish his own local unit cost per square is to imagine he is figuring a floor 10 feet square and figure the materials required therefor. No better record can ever be had than one's own record based on actual performance. It's a simple matter to keep records of a few jobs and divide the material footage required for actual construction by the squares of surface of linear foot of cornice, partition, and similar units.

TruCost Accurate Everywhere

Just as sure as "2 times 2 equals 4" everywhere, *TruCost* will work everywhere. And *TruCost* will work for the advancement of everybody in every community everywhere with very little work on the part of anyone connected with the estimating end of this homebuilding industry. It's all just as simple as 2 x 2.

American Builder's TruCost Estimating System

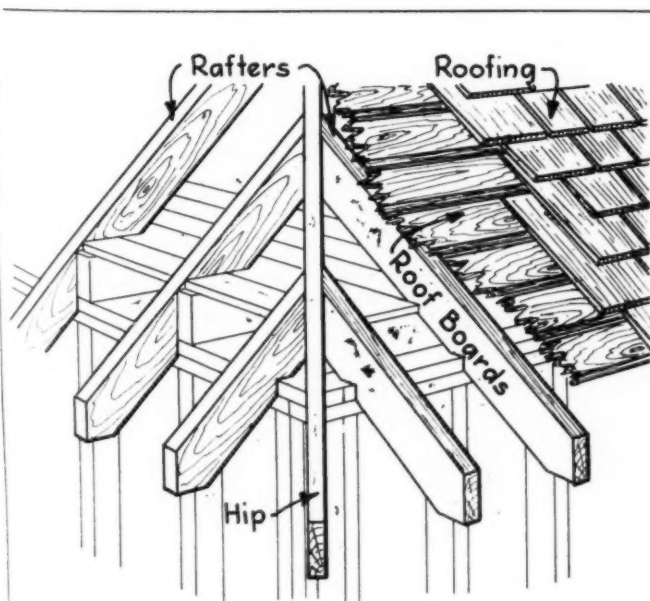
Unit quantity survey figures for every house design illustrated in this publication have been accurately computed according to *American Builder's "TruCost"* system; and these figures are tabulated on page 61 for the information of building industry men.

The basic idea of "*TruCost*" is simple. Instead of the customary detailed and itemized Bill of Material often involving two or three hundred separate items, the "*TruCost*" survey covers the job more accurately with only 20 to 30 units of surface measurement, linear distance and piece count. The building contractor, architect and materials dealer are shown how to compile and verify their own local costs for each of these "*TruCost*" units. Then, when anyone *anywhere* wants a bid price on any one of these illustrated designs, it is only the work of a very few minutes to apply local unit price to the published "*TruCost*" unit figures to give the complete cost to build.

"How much will it cost to build this house?" is the first question the prospect asks. No experienced home building editor would attempt to print an answer to this question on anything but a very limited LOCAL scale. Unit costs for labor and materials vary too much in different localities, and there are too many local variations in methods and materials of construction, to say nothing of wide differences in mechanical equipment and fixtures, for anyone but the local experienced building industry man to take these varying factors into account and name the proper local cost to build.

American Builder believes that "*TruCost*" figures will prove a real help to its readers,

- FIRST by cutting the time and drudgery of making out detailed estimates the old way.
- SECOND by avoiding costly mistakes through this simplified system.
- THIRD by assuring a proper profit on all jobs because "Overhead and Profit" are figured into every unit price.
- FOURTH by promoting sales and satisfied customers through the ability to quote quickly and confidently and in a way that the customers can understand.



MATERIALS REQUIRED PER SQUARE OF ROOFS (R)

Rafters (10% added for waste and collar beams)

R-1	2 x 4—16" oc	55 bd. ft.
R-2	2 x 6—16" oc	82 " "
R-3	2 x 4—24" oc	37 " "
R-4	2 x 6—24" oc	55 " "

Roof Sheathing (5% added for waste)

R-10	Boards laid close	105 bd. ft.
R-11	Boards spaced 50%	53 " "
R-12	8" Shiplap or D & M (7 1/4" face)	116 " "
R-13	6" " " (5 1/4" ")	121 " "
R-14	4" " " (3 1/4" ")	130 " "

R-20 Paper—Figure 110 sq. ft. per layer.

R-30 Shingles—Add price per square.

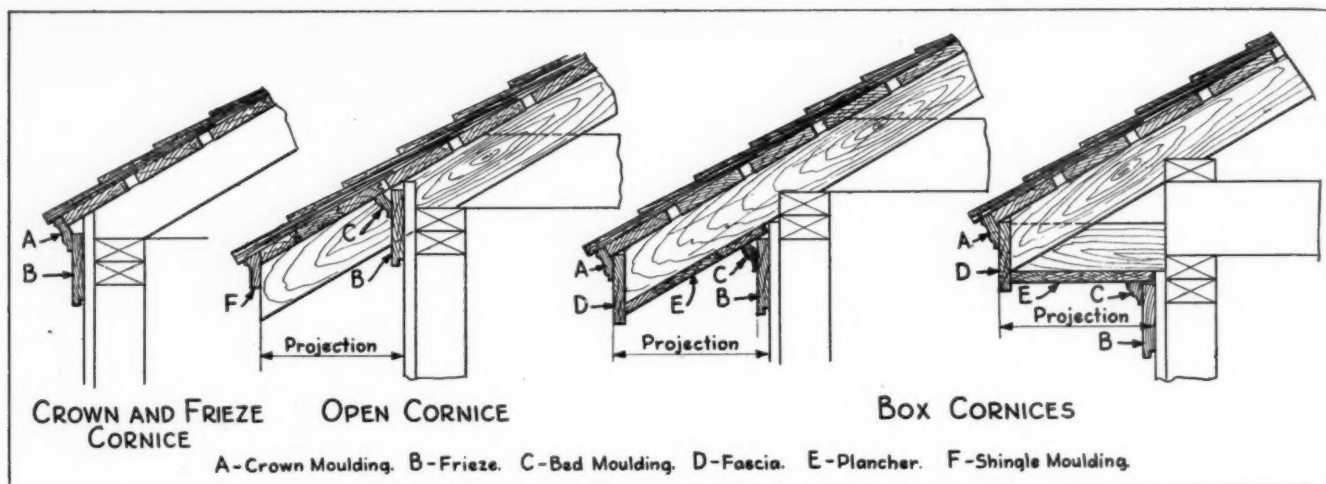
Nails—Figure 10 lbs. per square.

Hips per lin. ft.—Price of 1 sq. ft. roof, .3 hrs. labor and 1 lin. ft. hip shingle.

Valleys per lin. ft.—Same as hips plus valley flashing instead of hip shingles.

Note: Use tight sheathing for asphalt shingles and allow for cost of starting strips. If shingle stain is wanted, add to shingle cost.

Fig. 4. These items are included in "Square of Roof" in *TruCost* figures.



MATERIALS REQUIRED PER 100 LIN. FT. OF CORNICES (K)

10% added for waste

Measure cornices at eaves and not wall line.

Type of Cornice	C & F	Box Cornice		*Open Cornice	
Projection to Fascia	0"	12"	24"	12"	24"
K-1 Crown Mldg., A, lin. ft.	110	110	110	0	0
K-2 1x6 Frieze, B, bd. ft.	55	55	55	55	55
K-3 1x8 " " " "	73	73	73	73	73
K-4 Bed Mldg., C, lin. ft.	0	110	110	110	110
K-5 1x4 Fascia, D, " "	0	37	37	0	0
K-6 4" Clg. Plancher, E, bd. ft.	0	135	270	160	320
K-7 Shingle Mldg., F, lin. ft.	0	0	0	110	110
Paint Surface, sq. ft.	100	200	300	270	440

Compute price per 100 lin. ft. and point off two places for price per lin. ft. as given in quantity of units.

*Plancher for open cornice based on 1/3 pitch roof. Deduction can be made for roof sheathing it usually replaces.

Note: 1 1/4" frieze or fascia requires 1/4 more than 1".

Nails provided by other construction units.

Fig. 5. These items included in "Cornice, lineal feet" in *TruCost* figures.

To illustrate, if one finds that the joists, bridging, subflooring, paper and finish flooring cost \$203.40 for a house 30' x 30', or 900 sq. ft. of floor, dividing \$203.40 by 9 gives a cost of \$22.60 PER SQUARE (100 square feet) for the material for that floor. And if it costs \$414.00 for that material with labor and floor finishing, PLUS FAIR PROFIT FOR MR. CONTRACTOR, for these 9 squares of floor, the cost per square will be \$414.00 divided by 9 or \$46.00 per square.

Those "*TruCost Unit Costs*" can then be applied to the figuring of all other floors of identical specifications and with material prices and wage scale unchanged, to the end that there is practically no chance of error or omission. If ordinary care is exercised, *TruCost* cannot fail to eliminate serious losses and promote progress of builders of homes everywhere.

Inasmuch as the subflooring, paper and finish flooring are based on actual surface measurement, the only possible discrepancy is in the price per square for the joists and bridging. Anyone, by analyzing the joists required for several jobs, can convince himself that this item cannot vary enough to be of any consequence. The board feet per square per 2 inch depth of joist is almost as constant as the amount of flooring required per square of 100 square feet. No, there's no chance of going wrong

on joists. Studdings are joists placed on end and rafters are joists that slope.

Disregarding the variable human equation that always has and always will cause the price per square of floors, and all of the other component units of a building, to vary, *TruCost* must be almost just as accurate as any list of material can possibly be and more accurate in the long run. That assertion gives me ten-to-one odds because I checked on three houses some time ago with the following results:

On House No. 1—20 *TruCost* units provided for 232 items of a list.

On House No. 2—19 *TruCost* units provided for 197 items of a list.

On House No. 3—28 *TruCost* units provided for 233 items of a list.

Why anyone should want to take ten hours' time to do an hour's work, with ten times the chance of error and omission, is more than I can comprehend, especially when anyone who can make a list of material for a proposed house can easily learn to use *TruCost*.

The tables covering floors, roofs, cornices, partitions, are basic and will enable anyone to determine the local unit price much the same as explained for walls. Study them and work out pages similar to the typed portion of Fig. 2 and then get prices and extend the price per square and use *TruCost*. *TruCost* meets the dire need for better estimating methods and it is the simplest of simple matters for anyone to compile his table and get started to use it. The more one uses it the more use he will make of it and the more value he will place on *TruCost*. Furthermore, everyone who fails to get his competitor to adopt *TruCost* or some other systematic method of esti-

(Continued to page 108)

MATERIALS REQUIRED PER LIN. FT. OF 8' 6" PARTITIONS (P)

P-1	Framing 2x4 - 8 studs 16" oc, with single shoe and double plates.....	8	bd. ft.
P-2	Same as P-1 except studs 24" oc.....	6 3/4	" "
P-11	Wall Finishes—Figure material for 17 sq. ft. or 1 1/6 sqs., or 1.9 sq. yds. various finishing materials		
P-20	Baseboards and Picture Moulding—Figure 2.2 lin. ft. of each member		

MATERIALS REQUIRED PER LIN. FT. OF INSIDE FINISH OF OUTSIDE WALLS

Figure half the price of wall finishes and baseboards for partitions

Fig. 6. How "Partitions" etc. are figured in *TruCost*.

Small Brick Homes Selling Fast

**46 Built at Hobart, Ind., by Elliot & Kranz, Inc.,
and Sold in Fourteen Months**

AN ACTIVE market for well planned, well constructed small homes has been uncovered in the busy Calumet industrial region south of Chicago centering around Gary and Hammond, Ind. The well established firm of developers and home builders, Elliot & Kranz, Inc., selected a sizable tract at Hobart, Ind., on a small fresh water lake and on good street car transportation, and has built and sold 46 homes during the past 14 months. These are attractive five-room houses on lots 40 by 124 feet, offered to the buyers on a 10 per cent down payment with monthly payments, including taxes, insurance, principal and interest, as low as \$31 a month, the financing all being under the Federal Housing Administration supervision and insurance.

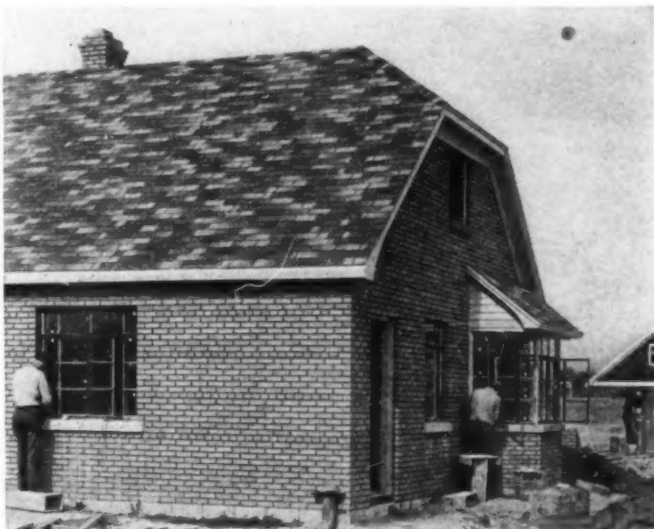
When the *American Builder* visited this operation early in December, most of the houses were completed, with four just going up and being rushed for enclosure before severe winter weather set in. Your reporter was struck by the neat and trim attractiveness of the houses, all in colorful face brick of cement concrete, with a range of colors varied enough so that there was no monotony in the total street appearance. The standard wall construction throughout is 8-inch solid masonry, the outside being colored Dunbrik laid in black Brixment mortar and 4-inch back-up Haydite tile. The Dunbrik are produced at the Cummerford plant at La Porte and cost \$19 per 1,000 delivered to the job. The insulating Haydite back-up tile are produced by the Haydite Building Units Company, Hammond.

Mr. Elliot, actively superintending construction on the job, expressed himself as confident that the buyers of moderate priced homes want quality in construction along with attractive exteriors and modern step-saving interiors, and the experience of his firm in developing this attractive subdivision and in constructing and

selling these homes certainly supports his view.

An inspection of the houses shows them to be compactly laid out, two-bedroom designs with good sized living room, dining bay in connection with the kitchen, and a centrally located utility room which contains an oil-burning "Gasoroil" warm air heater with short ducts leading to each room. The heated air is fed in at the ceiling line and the return is through floor grilles back under the concrete floor, which is raised about 18 inches above the ground level.

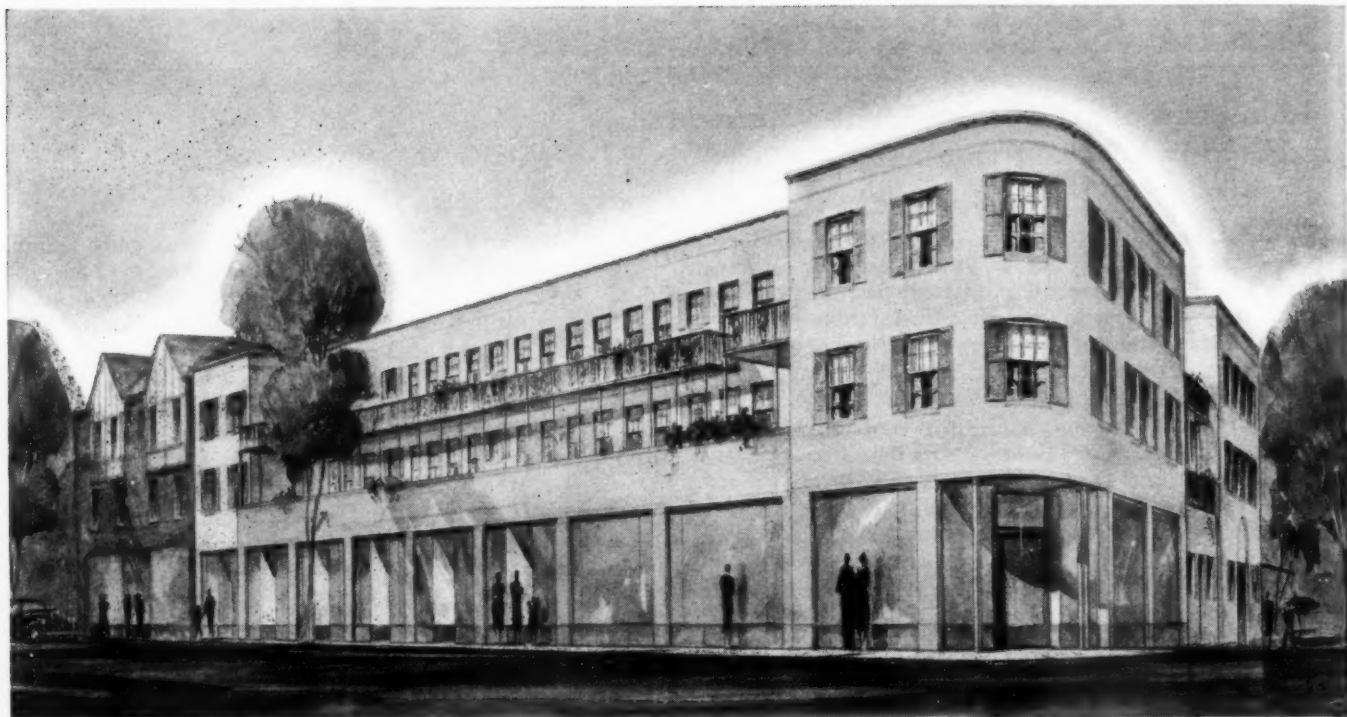
The utility room also contains a set laundry tub and
(Continued to page 108)



DUNBRIK home under construction at Villa Shores, Hobart, Ind., one of 46 built and sold.



FOUNDATION construction of basementless homes at Villa Shores. Concrete floor slab poured on heavy metal lath rests on cement tile posts placed on about 3-foot centers.



ARCHITECTS' RENDERING, above, shows business street side of apartment and store building which features novel living terraces.

Modern Apartment and Store Building of Unusual Shape and Design

Highland Park, Illinois, Structure Planned for
Site Between Commercial and Residential Sections

IN THE recent revival of apartment building, one type of multi-family structure which has up to now received very little attention but promises to be more popular in the near future is the combination unit with stores on the first floor and apartments above. Just such a building was completed a few months ago in Highland Park, Ill. It is known as The Terraces, and has many unusual points of interest.

One of the reasons why it is believed that this type of building will receive more prominence is that advances have been made in zoning and planning which call for a type of buffer building in the transition area between the purely business sections and the 100 per cent residential areas, either apartments or homes. In the case of The Terraces, this type of location has had a great deal to do with its success. Being within one block of a suburban railroad station and surrounding neighborhood business area, it offers great convenience to tenants who want a compact living unit handy to stores and transportation.

Armstrong, Furst & Tilton, Chicago architects, in designing this building, effected a pleasing compromise between the commercial side of the building on Roger Williams Avenue, the business street, and the apartment entrance side on Judson Avenue, facing the residential neighborhood.

A modern version of Southern Colonial architecture worked out ideally for this type of building. The setbacks where the apartment terraces and balconies are

located give interesting lines and add a very rentable feature to the apartments. The white painted brick and blue-green shutters and trim carry out a note of distinction and charm.

To further offset any resistance because of proximity to stores in the same building, much time was spent in studying and working out the smallest details connected with the apartment entrance. Wrought iron ornament around the carefully detailed Colonial doorway which leads to the tastefully furnished entrance foyer creates a good impression on anyone entering the building. Colorful rubber tile floor and rubber covered stair treads and risers, together with deeply carpeted halls, further carry out this idea.

The balance of the first floor is laid out for eight stores, six of which are of a size to accommodate the usual variety of neighborhood shops. A corner of the irregularly shaped store No. 8 can be taken out to provide a smaller unit. This space can be thrown into the larger store which has fine, clear floor area because there are only two supporting columns and excellent window display area; this would make an ideal location for a drug store serving light lunches. Stores Nos. 2, 3, 5 and 6 have a knockout panel in the concrete floor for stairs in case a tenant wants basement storage space. The heating plant is located underneath store No. 4.

There are 20 efficiency apartment units in this building, ten on each of the two upper floors. Smaller units consist of living room with dining alcove space, service room

kitchen, bath and dressing closet. One or two Roll-A-Way beds are kept in these closets. Each apartment has its own terrace opening off the living room. The larger units are similar, with the addition of one or two bedrooms.

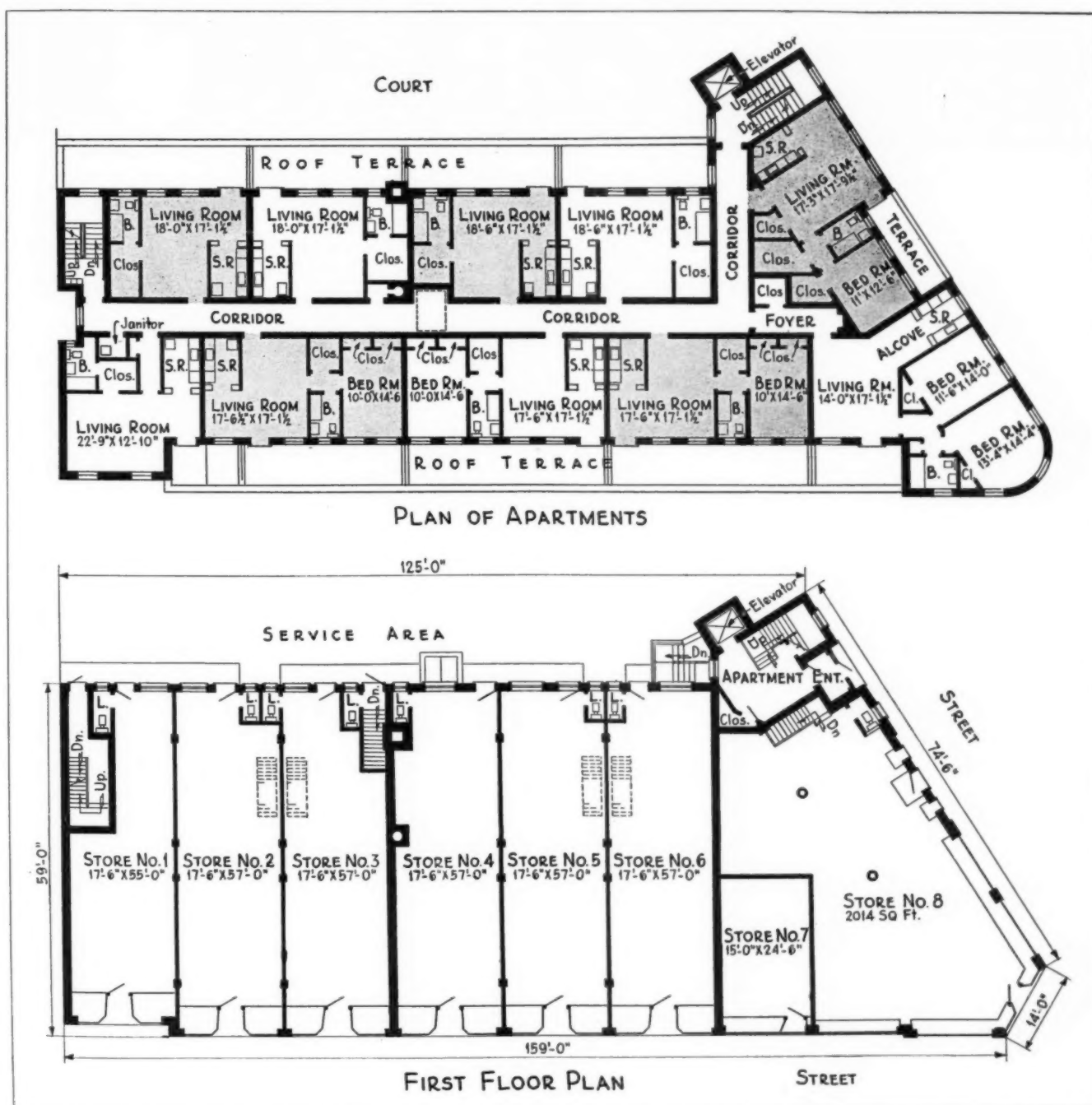
Equipment in the apartments was selected to offer the most in modern living. The kitchens were especially designed by the St. Charles Manufacturing Company and are equipped with noiseless steel cabinets, stainless steel sinks, Electrolux refrigerators, and Ilg ventilating fans. Louvred, folding screen type doors separate this room from the dining area. The living rooms are well lighted. Apartments are equipped with specially designed Beardslee lighting fixtures, numerous electric outlets, radio and telephone outlets. The tiled baths have matching colored Crane plumbing fixtures. Bedroom units have twin closets as well as the large dressing closet to provide ample storage space.

The building has proved to be highly successful from the investment standpoint. Mr. Paul Phelps, managing

agent of the building who is also a developer and builder, was largely responsible for many of the features contributing to its success. He has a broad background of management and building experience. To keep maintenance costs down the building was planned to be as nearly self-operating as possible. Such features as Kernerator incinerator, self-operating Otis elevator, automatic stoker-fired Kewanee boiler on two-pipe steam heating system, and rear hall delivery receiving cabinets for each apartment are some of the contributing items. Incidentally, this locker arrangement in the rear stair hall keeps tradespeople out of the corridors; front entrance, apartment, stair hall and cabinet locks open with each tenant's key.

Other materials and equipment used in the building include Pittco "Easy-Set" store fronts and Tile-Tex asphalt flooring in stores, Barber built-up asphalt roof, Insulite board under terraces, Lok-Joint lath on outside walls.

Erik A. Borg was the masonry contractor on this job and Turner-Wilcox was the carpentry contractor.



PLANS of The Terraces indicate store arrangement and typical apartment floor of this building designed for an odd-shaped lot.



ATTRACTIVE little library at Hackettstown, N. J., designed by Carl H. Weckers. It has good lighting, well-worked out arrangement, and includes a committee room in basement.

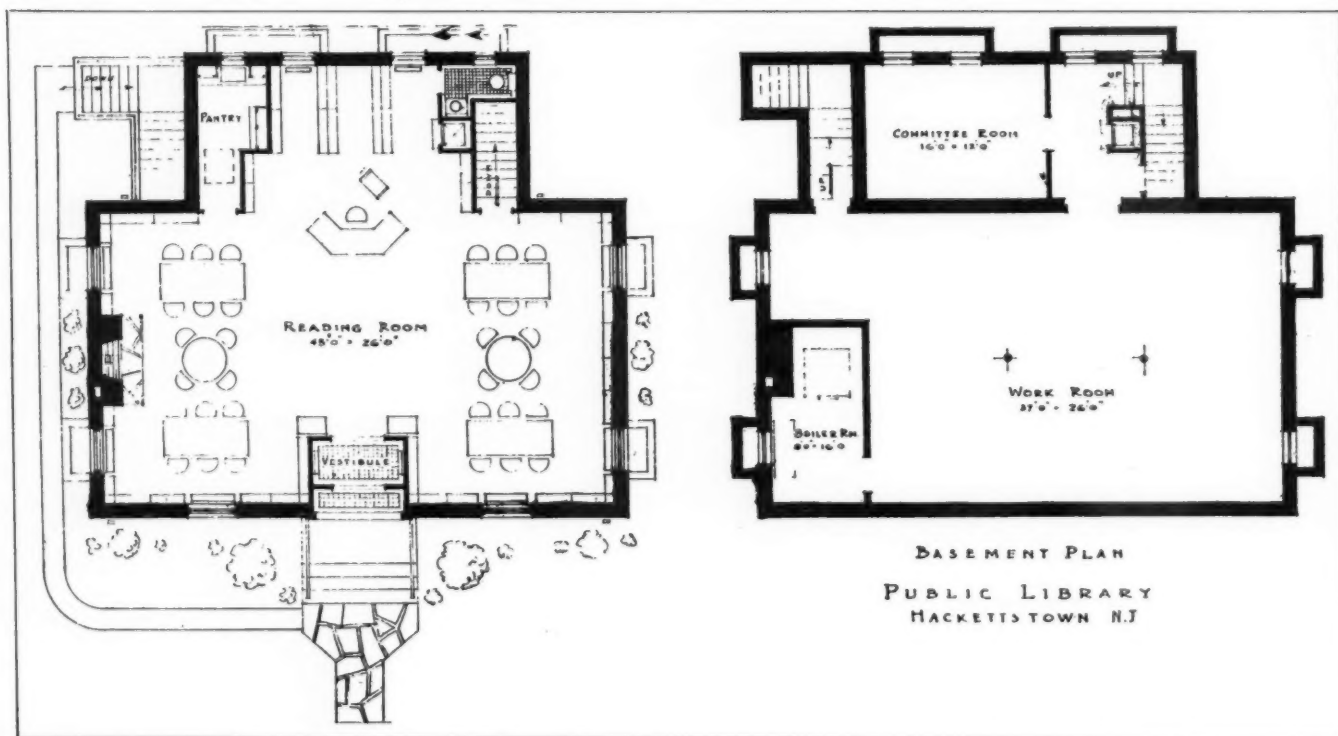
Small "Home Town" Library

HUNDREDS of small towns are still without modern and up-to-date libraries, and for the small town builder this offers a source of business worth looking into. Typical of what can be done is the little 47½ by 41-foot library designed by Architect Carl H. Weckers of Mountain View, N. J., for the town of Hackettstown, N. J. The building has a conservative Colonial design with a substantial, permanent look that would add worth to any community.

The problem of any library is to get ample light, pro-

vide convenient book storage space and pleasant reading surroundings. This has all been done on the first floor, which has a vaulted ceiling in the main reading room. There is a small pantry, a laboratory and a coat closet conveniently located near the librarian's desk.

Construction is of 8-inch cinder block with 4-inch face brick. Window sills, windows and coping are of precast white cement. Floor beams are of Truscon light-weight steel joists with a concrete floor and maple finish. Roof is of slate. All interior woodwork is chestnut.



Principles of Well-Arranged Small Stores

This First Article on Store Planning Outlines Some of the Fundamental Characteristics of Commercial Buildings Arranged for Profitable Selling

PRESENT practice in the layout of efficient small retail stores and comments on how to achieve improved merchandising arrangements are reported in a summary prepared by the Bureau of Foreign and Domestic Commerce, U. S. Department of Commerce.* Some of this material is of primary interest to building industry men who are doing new construction and modernization work in the commercial field. Portions of this report are reproduced in this first article of a series together with other related data along similar lines. It should provide good basic information to anyone contacting owners, tenants or persons who are planning new retail establishments. A check list on page 72 gives 23 characteristics of well-arranged small stores that apply to either new or remodeled buildings.

The objectives of improved layout are (1) to serve the customer more effectively, (2) to co-ordinate operation, and (3) to increase the sales and profits of the store. "Modernization," "renovation," and other terms are used to describe the physical improvements that may be made to bring this about. No amount of improvement in the appearance or layout of the store can be regarded as a cure for poor management; but when the designer of a store lays it out with the skill and with understanding (assuming that it is backed by sufficient capital and that a satisfactory location has been selected), such a layout is a quick, direct, and powerful aid to the merchant in his effort to serve his community and thereby justify an increased net profit. The underlying business purpose of improvement in store layout is to increase net profit. This purpose may be accomplished in a number of ways, but all look toward ends:

A. Reduction in the expense of the store—Means of reducing expense may be considered as the operating-efficiency aspect of improved layout. Improved layout tends to reduce expense by (1) lessening the wage expense per dollar of sales by increasing efficiency; (2) eliminating unprofitable store functions, and unnecessary kinds of expense; (3) reducing the amount of inventory investment that is required for a given volume of sales; and (4) reducing the losses that result from petty theft and from deterioration and destruction of inventory.

B. Increase in the profitable volume

*From booklet entitled, "Store Arrangement Principles."

of sales of the store—The effort to increase profitable sales volume may follow either of two courses: (1) the merchant may attempt to increase total sales through improved layout and better display, or (2) he may attempt to increase the amount of sales accounted for by high-margin items or by any department of stock he chooses to accord particular stress.

A real difference exists between true improvement and mere change in the layout of a retail store. Desired results are not reached by mere change; they are reached only when the change brings about an increase in net profit.

Any change may for a short time increase the volume of sales because of the natural curiosity of the people; but the change is not an improvement if it unduly increases operating expense. When this occurs, net profit is reduced, in spite of the temporary increase in volume of sales.

Thus, layout change should be clearly an improvement, designed to accomplish truly gainful purposes; or it should be made with the full appreciation that it is only an expense.

Evidence of Improved Store Layout

A few years ago the Department of Commerce, in co-operation with local merchants' associations, set up model grocery stores in a number of cities, as an example of modern grocery store layout. The purpose was to inspire local merchants to make use of the type of layout

Increase in Sales of 59 Modernized Grocery Stores in Jacksonville, Fla., 1931, One Year After Model Store was Exhibited

Store No.	Cost of improvements	Sales increase (percent)	Store No.	Cost of improvements	Sales increase (percent)
1.....	\$4,000	40	31.....	\$ 170	10
2.....	450	None	32.....	50	None
3.....	200	25	33.....	400	25
4.....	300	Gradual	34.....	50	None
5.....	1,000	15	35.....	100	5
6.....	75	10	36.....	200	20
7.....	3,000	Gradual	37.....	175	5
8.....	35	None	38.....	200	20
9.....	90	50	39.....	100	10
10.....	2,000	10	40.....	300	25
11.....	1,000	5	41.....	500	50
12.....	1,170	10	42.....	200	60
13.....	300	None	43.....	250	10
14.....	4,200	25	44.....	1,000	20
15.....	800	65	45.....	25	None
16.....	400	15	46.....	2,500	15
17.....	200	20	47.....	50	20
18.....	125	10	48.....	1,000	35
19.....	130	10	49.....	25	5
20.....	2,000	15	50.....	75	10
21.....	125	20	51.....	1,200	None
22.....	90	40	52.....	100	20
23.....	100	15	53.....	400	15
24.....	3,000	25	54.....	150	10
25.....	250	None	55.....	45	15
26.....	150	15	56.....	300	5
27.....	3,000	60	57.....	375	40
28.....	450	20	58.....	100	10
29.....	1,500	50	59.....	200	15
30.....	50	25			

TABLE at right shows how well planned store modernization pays out with increased sales.

that was exemplified. Many did. One of these model stores was set up in Jacksonville, Fla., and one year later a survey was made to discover the effects of the changes in local merchandising. The table on page 71 indicates the results of that modernization.

The results are noteworthy in that they occurred during the down slope of the depression which began in 1929. The food-group stores in the United States as a whole had a declining index of sales over the period from 1929 to 1933, after which the index began to rise. The record of the years is as follows (from estimates made

in the Bureau of Foreign and Domestic Commerce), in which estimated sales of food stores from 1929 to 1937 are expressed as per cent of 1929 sales:

	Per cent		Per cent
1929	100	1934	67
1930	95	1935	74
1931	83	1936	79
1932	67	1937	82
1933	63		

Of the 59 stores, 8 reported no increase in volume, 2 stores reported increases without stating amounts, and 49 reported increased volume of 5 to 65 per cent. While other factors, such as increased interest in the job, may have been responsible for some of the increases, improvement of the store was an important factor.

Much modernization has also taken place among drug, hardware, and dry-goods stores, as well as in other kinds of business. The weight of evidence indicates advantage from improvement in store layout for any kind of retail or service business.

Another class of store modernization which has recently run into a large volume involves the store front alone. This type also pays for itself in increased sales. As an example, Evan Hitchner, manager of J. E. Hitchner & Son, furniture store in Salem, N.J., points out a 15 per cent spurt in sales during two months after he decided to apply the magic of modernization to his store front. He was inspired by reading a survey similar to the one in this article which showed that 34 per cent of the average furniture store's business results from the store front itself—more than from any other single advertising medium.

After discussing the various building materials which could be used for the "face lifting," with Ralph Harvey, local builder who got the job, Mr. Hitchner selected structural glass as most suitable to his needs and the one

CHARACTERISTICS OF WELL ARRANGED SMALL STORES

BECAUSE of basic layout similarity between small retail stores in all kinds of business, it is possible to set up a list of characteristics that are common to small stores that are well designed and well operated. These characteristics, listed below, are sought because they provide promotional benefits or expense savings.

1. A suitable and attractive store front.
2. Good signs identifying kind of business and store.
3. Attractive show windows suitable for the kind of business.
4. Good sidewalks, easy entrance, store floor at street level.
5. Adequate illumination.
6. Sufficient department identification to permit easy customer progress to the department sought.
7. Sufficient aisle and circulation space to invite free movement about the store.
8. Use of light, color, and space to create the impression of size and spaciousness.
9. Easy point-to-point visibility throughout the store.
10. Relating departments and goods to create maximum number of multiple sales.
11. Placement of selected service and commodity stations to facilitate circulation and convenience.
12. Accessibility of shelf merchandise to invite self-service where desired; achieved by eliminating excessive floor fixtures.
13. Absence of most of the larger fixtures designed exclusively for goods of one manufacturer. Such goods may be consolidated with regular inventory, in standard fixtures. (Sales volume and margin produced may justify exceptions.)
14. Avoidance of excessive visibility of unpleasant manufacturing operations, such as butchering, fitting and altering, and even such service operations as shelf replenishment and order filling.
15. Adequate ventilation, to avoid unpleasant odors and to protect merchandise.
16. Temperature in the store kept within the range of comfort, insofar as reasonably attainable.
17. Adequate protection of goods against pilferage.
18. Elimination of hazards to life, limb, or property of customers and employees.
19. Maintenance of sanitary conditions.
20. Absence of obsolete equipment, fixtures, decorations, displays or non-essentials that interfere with operations or take customers' attention from buying.
21. Conformance to regulations governing sanitation, fire hazard, licenses, and other matters.
22. Separation of service departments that are separable from selling: (a) to avoid confusion and customer dissatisfaction and (b) to facilitate the operation of separated departments.
23. Limited use of uninteresting decorations, manufacturers' posters, window enamels, decalcomanias.

THE group of 23 characteristics of well arranged small stores, as shown in the box of the left, provides a good check list for designers commissioned to lay out or modernize such commercial structures. Projects which qualify according to these points will be generally more satisfactory from a business standpoint than those less thoroughly planned.

most likely to achieve the atmosphere of distinctive smartness which he desired.

The entire facade of the three-story building was reconstructed, eliminating an old metal shed, or canopy, which extended over the pavement and darkened the show windows.

Four hundred square feet of Vitrolite structural glass, manufactured by the Libbey-Owens-Ford Glass Company, were used to surface the front wall up to the level of the second floor. The main portion of the shining glass front is of ivory Vitrolite with wide borders and bulkhead of colorful royal blue agate Vitrolite. Extruded aluminum was employed for sash, door and swing hardware and grillwork.

The door was moved back from the pavement, and the resulting entranceway was used to enlarge the show windows, which are now of clear curved plate glass and are capable of holding complete room furniture suites.

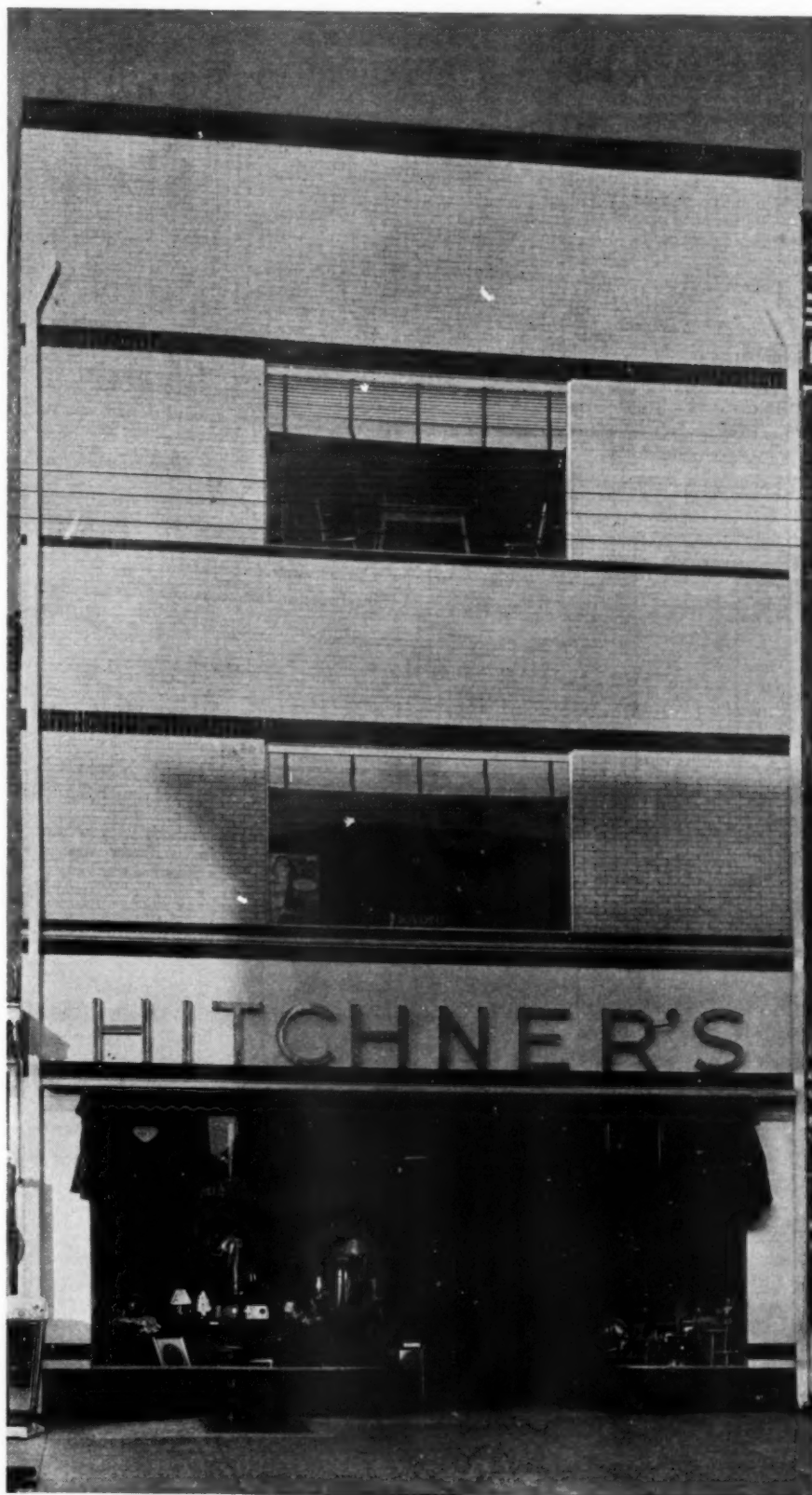
Above the Vitrolite facing blue and ivory tile bricks constitute the facing, carrying out the same attractive color scheme as on the lower level. Large plate glass show windows were installed on the second and top floors. (See illustration.)

Following the expenditure of approximately \$5,000 for the entire renovation Mr. Hitchner confesses he was momentarily doubtful whether the investment had been warranted. But let him tell the story:

"The day after the store reopened, a family from Bridgeton, N.J., 15 miles away, stopped in, said they had never realized there was a furniture store here before, and bought approximately \$1,000 worth of merchandise and paid cash! The very next day a family returning from a summer resort came through Salem, was attracted by the glass store front, and purchased \$500 worth of furniture and had it shipped to their home in Baltimore, Md."

Mr. Hitchner makes a practice of changing the furniture group shown in one of his windows every week. Because of the attractive exhibit the new show arrangement makes possible, he sold the first ten suites exhibited. During that period he sold as many as three additional suites similar to the one displayed. The other window exhibits individual items, such as radios, end tables, and desks, and those have moved more quickly also, he states.

All in all, business of the Hitchner firm has increased more than 15 per cent because of the new front.



THIS modernized furniture store front in Salem, N. J., is given credit by the manager for having increased sales about 15 per cent above the pre-modernization level. The new facade has an ivory Vitrolite structural glass treatment on the ground floor and blue and ivory tile bricks on the second and third floors to carry out the same attractive color scheme.

Portfolio of Architectural Plates of DOUGLAS FIR PLYWOOD PANELING

PREPARED BY CARL F. GOULD, F.A.I.A.

The third of a series intended as suggestions to the builder and architect as possible ways of using Douglas Fir Plywood for walls and equipment items in modern shop design.

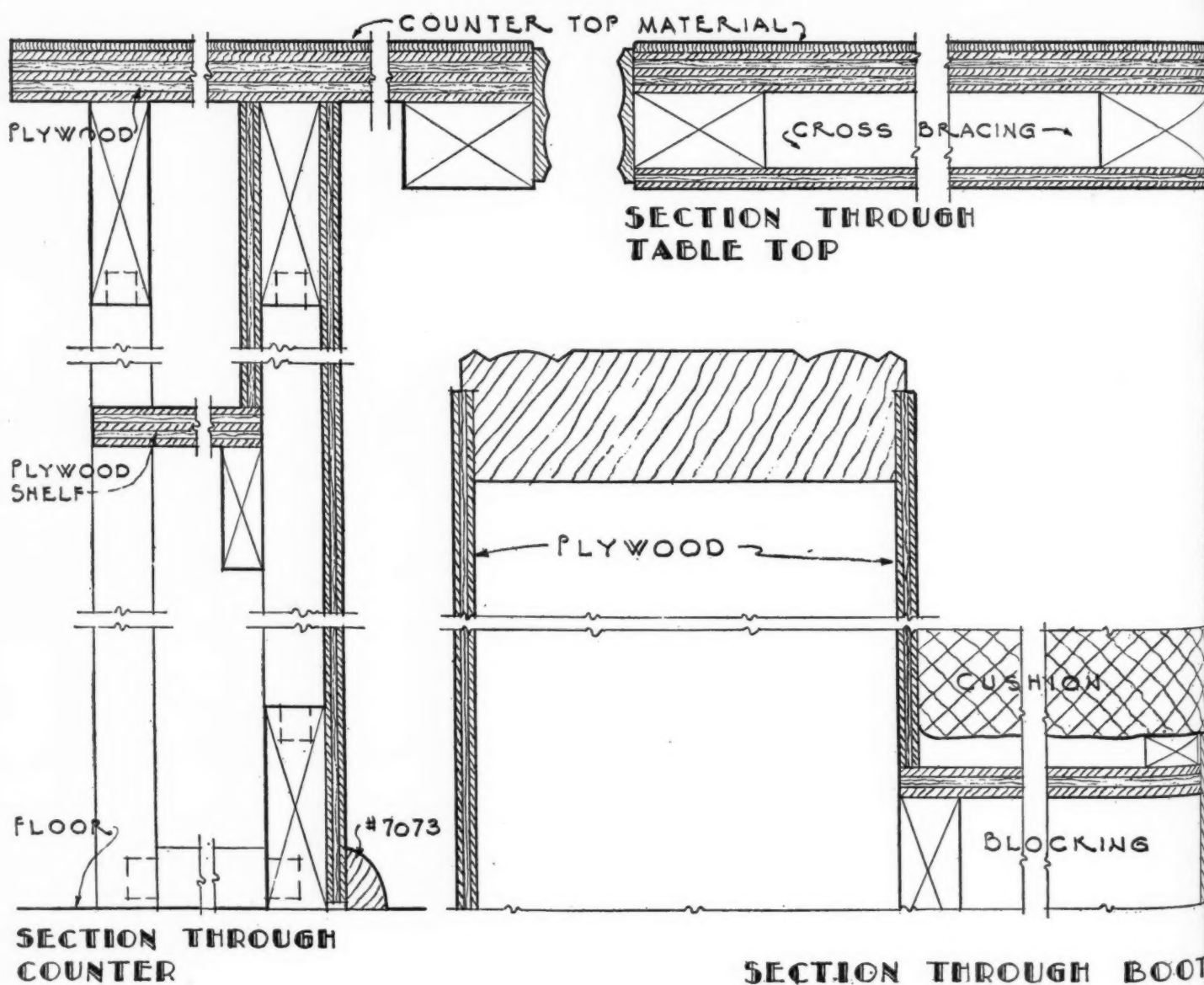
THE SEMI-FORMAL RESTAURANT AND BAR as detailed on these pages is adaptable to new construction or for modernizing an old building. Douglas fir plywood is used in a combination of flush and V joints. Careful workmanship is required to produce an effective result. The details indicate how plywood can be employed for seats, seat backs, and counter front and top. The plywood surfaces should be painted, with horizontal stripes in contrasting colors, and lined as the judgment may direct with brilliant color. All wood surfaces should be given a dull varnished surface treatment. With this type of design, it is desirable

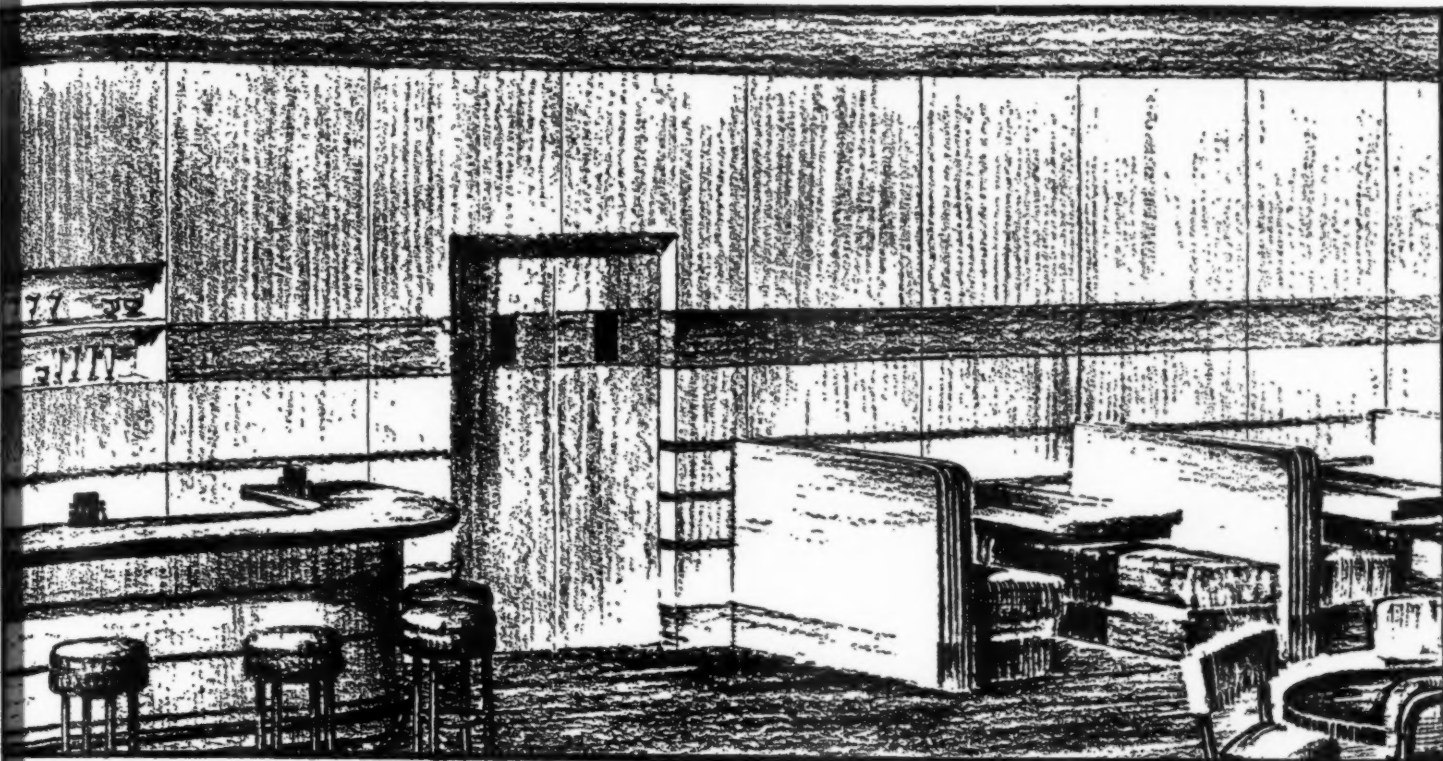
to conceal entirely the grain of the wood in the manner described.

MATERIALS: Wall panels are of a wallboard grade of Douglas fir plywood, $\frac{1}{4}$ " thick; stock panels in this grade are available in 12" to 48" width in 2" multiples and in 5', 6', 7' and 8' lengths. Paneling is applied with 4d finishing and casing nails, set and puttied. Seat backs and booth partitions may be of $\frac{3}{8}$ " or $\frac{1}{2}$ " panels of wallboard grade. Counter fronts should have grain of face plies running vertically, for ease in bending the $\frac{1}{4}$ " panels. Shelving should be $\frac{5}{8}$ " S-2-S grade.

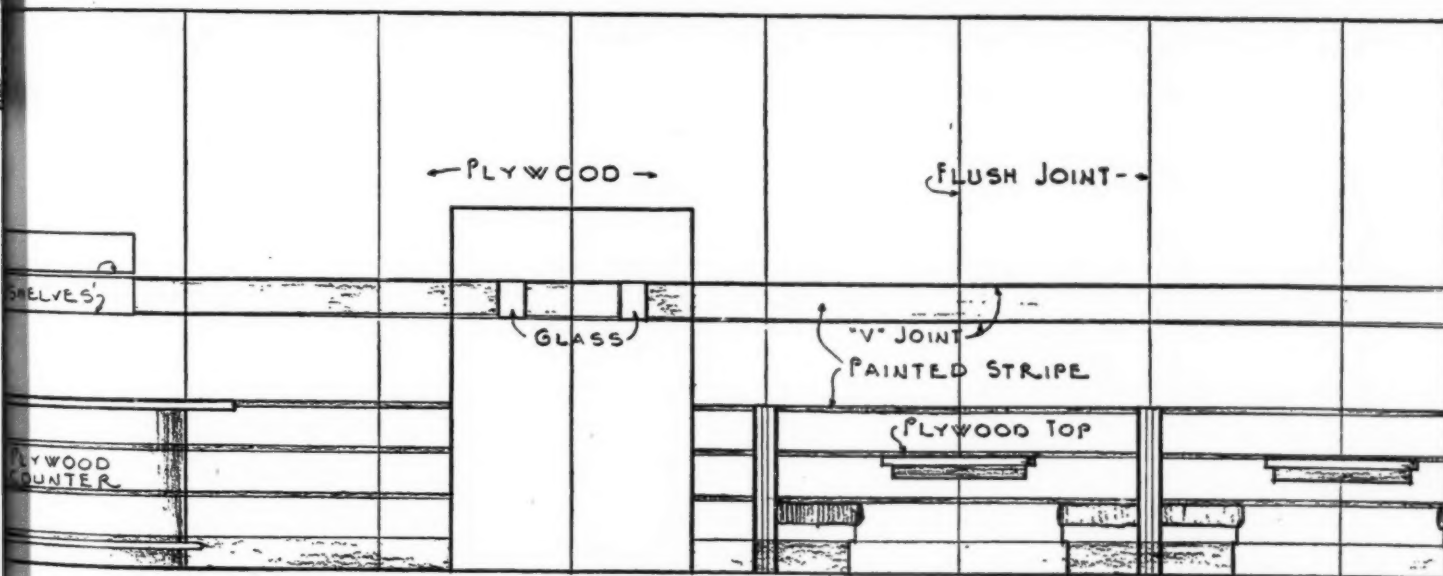
DETAILS

SCALE $\frac{1}{2}$ FULL SIZE

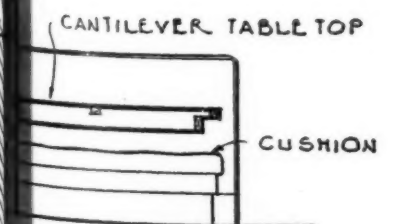




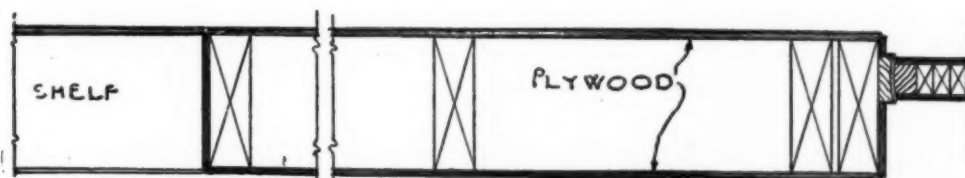
RESTAURANT AND BAR



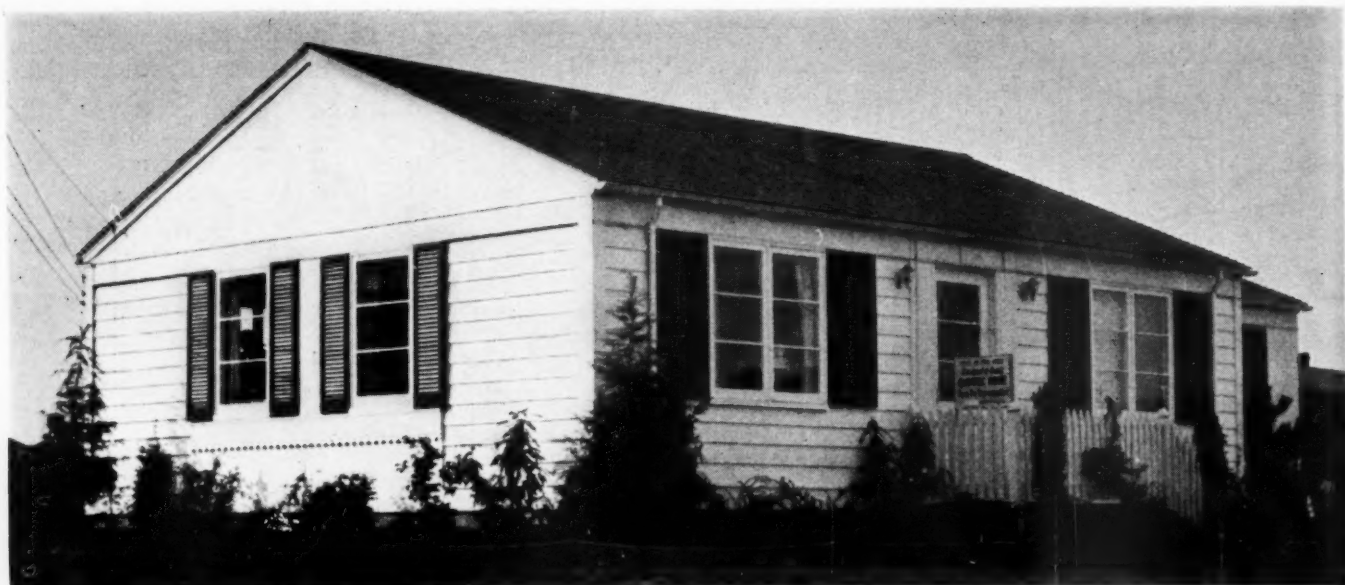
SIDE ELEVATION
SCALE $\frac{1}{4}" = 1'-0"$



SELECT-THROUGH BOOTH
SCALE $\frac{1}{4}" = 1'-0"$



PLAN THROUGH WALL
SCALE $\frac{1}{2}" = 1'-0"$



THE ORIGINAL Quintec House was moved to its permanent location as seen above, after being first displayed in downtown Seattle.

Seattle House Completed in Half Day

Shop-Fabricated House Designed by Architect George Wellington Stoddard for Low-Cost Field Is Quickly Set Up and Ready to Live in Immediately

A COMPLETE house for \$2,980! That's the news that comes, not from a jerry builder, but from George Wellington Stoddard, well known Seattle architect. With his associates, Mr. Stoddard has designed the ingenious "Quintec House" shown with plan variations on these pages. What's more, the price includes all equipment.

The name Quintec designates five outstanding technical points of its construction, which are that the house is ready to live in when delivered to the lot; is fully equipped; is designed by an accredited architect; is built on a plan of factory precision; has addable units.

When the house was first displayed for two weeks as set up on a downtown street in Seattle, many tourists were included among the 25,000 visitors who thronged through it. However, unless they live within a one hundred mile radius of Seattle, they cannot obtain a Quintec pre-built house.

The house is entirely shop-constructed—roof, walls, floor—but so constructed that it comes in two halves, split down the ridge pole, the gable-end walls, and along the middle of the floor. These two halves are hauled on trucks from the factory, set up on the foundations, and are locked together by patented steel members, built in along the dividing line. The house is put up, ready to move into, in from only 3 to 4 hours.

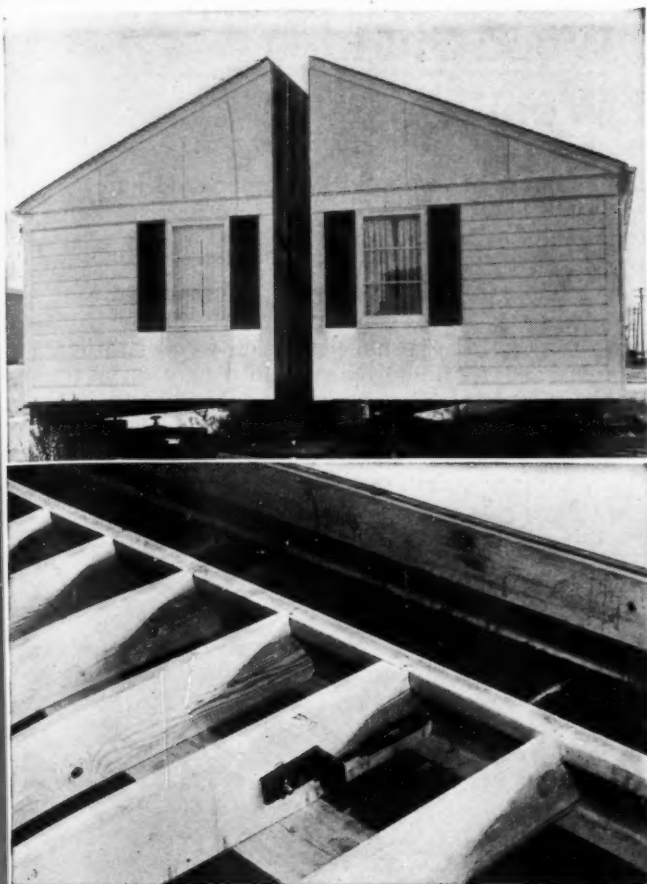
The basic unit which is shown in floor plans opposite as the gray portion, 34 x 24 feet, has one good sized

bedroom. The multiple-use room, however, has space at the end for a single bed or bunk. Sliding doors hide laundry and service equipment, when not in use. Living room, dinette, kitchen and bath complete this unit.

Included in the basic price of \$2,980 (Seattle estimate)



RIGHT, above: Kitchen is fully equipped in delivered house. Below, sliding doors conceal utility items in multiple-use room.



ABOVE: Basic unit is delivered in two halves, especially braced, so that a solid, inseparable unit is formed, when mounted on foundation and tied together with $\frac{3}{4}$ -inch turnbuckles.

are a National Electric automatic hot water heater, Westinghouse electric refrigerator and range, West Wind kitchen exhaust fan, H. C. Little automatic oil-fired circulating warm air heater-conditioner, Standard Sanitary bathroom fixtures, complete Yale hardware, lighting fixtures (all especially designed), window screens that recess into the walls when not needed, removable storm sash, and a breakfast table and benches. A Bendix washing machine is optional, at regular cost.

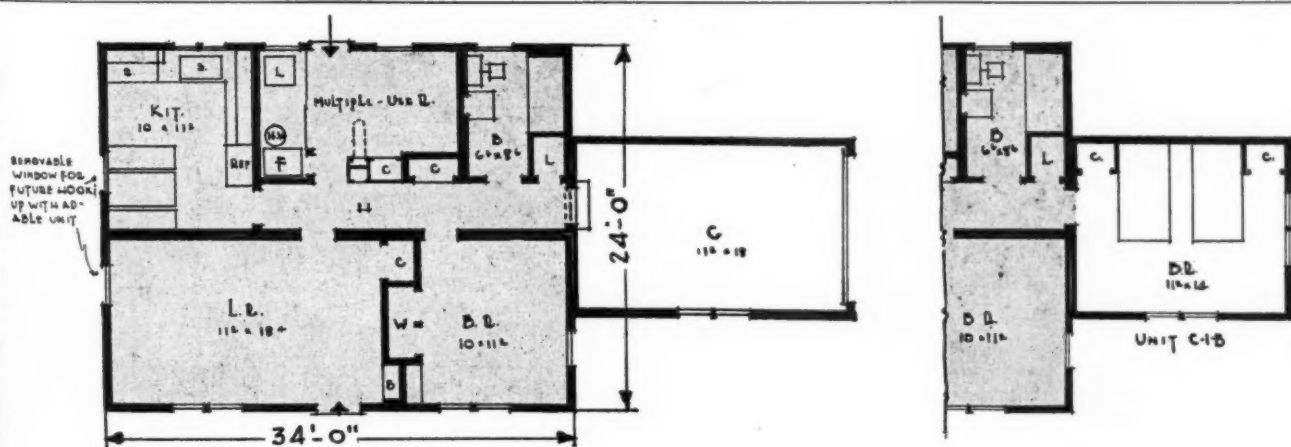
The basic house may be enlarged, as shown in the plans, by the addition of a dining room (\$425) or a bedroom (\$450). Each of these additions changes the appearance of the house, yet either one or both combine to form a neat architectural unit.

For the exterior finish, there is a choice of two treatments—one, an attractive Colonial cottage type, the other with similarly pleasing low lines, but with modern details.

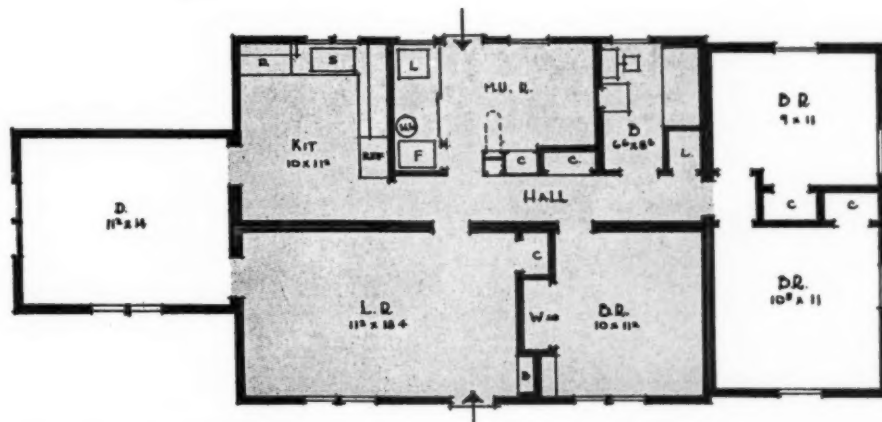
Throughout, Mr. Stoddard emphasizes, materials and construction are first class. The floors have a subfloor of $\frac{3}{4}$ -inch Douglas fir plywood and a finish floor of Masonite tiles except Sealex linoleum in kitchen and bath. The walls are built of kiln-dried 2 x 4 studding with beveled Homasote as an interior finish, a layer of 2-inch vapor-sealed U.S.G. mineral wool insulation, and a red cedar exterior, either shingles or clapboards.

The roof, likewise, has an all-over layer of insulation and is surfaced with red cedar shingles. All water pipes are copper; the electric wiring system is engineer-designed, and all carpentry, including connection joints, is factory controlled, precision-built, cabinet work.

The system has FHA approval and on a 25-year loan, the basic house costs approximately \$25 monthly in Seattle territory, including taxes and insurance, each payment reducing both principal and interest. The system has entered actual production by a Seattle firm known as the General Housing Corporation.



FIVE plan arrangements other than the basic unit (shown in gray) are possible with the Quintec House. These can be either assembled immediately or added as later units. If attached garage is desired, it can be located as above, a door replacing the window in end of the hall. One or two bedrooms can be placed at this end as indicated at right; dining room is added at other end of this basic unit.



Tests Show Fire Resistance of Wood Stud Partitions Filled with Mineral Wool*

A RECENT series of fire tests has been conducted at the National Bureau of Standards in an effort to increase the fire resistance without change in the material or thickness of the facings of several wood-framed partitions with the space between the studs and the facings filled with mineral wool.

The constructions were built into movable frames and, for the fire test, were placed to form one wall of the furnace chamber. The tests were conducted in substantial accord with specifications developed under the auspices of several national technical societies and this Bureau. Most of the partitions were tested under load in fire endurance tests. Fire and hose stream tests were conducted with constructions that withstood the fire endurance test for one hour or more, and they were found to pass the requirements in this respect.

A summary of the results is given in the table below, in which the fire resistance periods are given for ¼-hour intervals. For the bearing classification the results are based on ability to sustain for the given period under the fire exposure a design load, taken as 358 pounds per sq. in. of net area of wood studs, prevent the occurrence of an average temperature rise on the side not exposed to fire of 250° F. or a rise at any point of 325° F., passage of flame, or ignition of cotton waste placed against the unexposed side. For the nonbearing classification all but the first of these criteria are applied.

In the first two tests listed, the loose rock wool was dropped into the stud space in a height of 4 ft. and tamped with a sash weight in the case of the first test, and lightly packed with a stick for the second. Both failed through ignition of boards on the unexposed side at points where there were voids in the fill, the results differing little from those obtained with a similar unfilled partition. In the third test the fill was placed progressively as the facing was applied, resulting in a fill of more uniform density.

For the partition faced with lime plaster on wood lath, the fill was placed by pneumatic means after the partition was built and aged, the equipment used being typical of those applied in placing wall and attic insulations. The failure in this case was also apparently at a void or sparsely filled location in the fill. The partition, however, withstood the test for 16 min. longer than a similar unfilled partition. Some further tests with wood lath and plaster partitions with mineral wool fill in bat form are in progress.

The rock, slag, and glass wool bats applied as fill in the remaining tests were of the usual wall-thick types used for house insulation, with waterproofed paper on one side. They were 15 in. wide and 23 to 48 in. long, and were placed against one facing for the full height of the partition before the other facing was applied. Where secured by nailing 8d finishing nails were driven on 12 in. centers through both ends of the bats into the middle of the sides of the studs. The densities given apply for the

*From U. S. Department of Commerce report.

TABLE, AT RIGHT, shows results of fire tests on wood stud partitions filled with mineral wool.

nominal area of the bats. As compressed into the stud space the density would be about 10 percent higher, or equivalent to about 2.2 pounds per cu. ft. for glass wool and 3.6 to 4.7 pounds per cu. ft. for rock and slag wool.

The filling increased the fire resistance of the construction with the ½ in. gypsum board facing by 10 to 20 min., for that of gypsum plaster on wood lath by 25 to 30 min., and for those of gypsum plaster on metal lath by about 30 min. The proportions given in the table for the plaster mix are in terms of weight of gypsum plaster or dry hydrated lime to dry weight of sand. Where two ratios are given, the first is for the scratch coat and the other for the brown coat. The Potomac River sand used has a high content of quartz and chert. Where a white finish was applied, its thickness is included in the given thickness of facing.

The tests indicate that the filling of wood-stud partitions results in a substantial increase in fire resistance. The filling apparently retards the transmission of heat to the unexposed facing and decreases the rate of burning of the wood supports. The results indicate that care is needed to obtain a fill without voids. Apparently this condition is more often attained with fills in bat form placed before the last facing is applied than with fills placed after both facings are in place. The former method also affords opportunity for inspection. However, even with this type of construction care must be exercised if results comparable to the ones given here are to be obtained. The truth of this is brought out in cases where the facing on the side exposed to fire disintegrates or falls off relatively early in the test. Then, if the filling has been nailed in place, or held by equivalent means, added fire resistance is obtained. This is true to a less extent even if the facing does not fall off, according to the Commerce Department.

FIRE RESISTANCE OF WOOD STUD PARTITIONS FILLED WITH MINERAL WOOL AS SHOWN IN TESTS CONDUCTED BY NATIONAL BUREAU OF STANDARDS

Type of Facings used on Wood Stud Partitions			Mineral Wool Filling		Fire Endurance Period	
Material	Thickness	Plaster Mix	Form	Density lb.-sq.in.	Bearing	Non-bearing
T & G 3 in. wood boards.....	¾"	.....	Bulk, tamped	6.9	¼ hr.	¼ hr.
Same as above.....	¾"	.....	Bulk, loose	2.7	¼ hr.	¼ hr.
Same as above.....	¾"	.....	Bulk, hand packed	2.6	½ hr.	½ hr.
Wood laths, lime plaster.....	½"	(1:5) (1:7 ½)	Pellets blown in	2.2	.....	¾ hr.
Gypsum board.....	½"	.....	Bats, not nailed	0.6 to 1.2	¾ hr.	1 hr.
Same as above.....	½"	.....	Bats, nailed	.6 to 1.2	1 hr.	1 hr.
Wood laths, gypsum plaster.....	½"	(1:2) (1:3)	Bats, not nailed	1.0 to 1.3	1 hr.	1 hr.
Same as above.....	½"	(1:2) (1:3)	Bats, nailed	1.0 to 1.3	1 hr.	1 hr.
Metal lath, gypsum plaster.....	¾"	1:2	Bats, 2/3 nailed	1.0 to 1.3	1 ½ hr.	1 ½ hr.
Same as above.....	¾"	1:1	Bats, 2/3 nailed	1.0 to 1.3	1 ½ hr.	1 ½ hr.

Eliminating Dampness in Old Brick Walls

TROUBLE is being experienced in many parts of the country in brick and stone houses built with lime mortar, especially the very old houses, due to capillary action by which water is carried upward from damp ground into the walls. It causes damage to wall paper by efflorescence and by discoloration, and staining by chemical salts and coloring carried from the wall into the paper, and by deterioration of the paper by the damp condition developed therein. Woodwork also suffers, and grounds rot out rapidly in many instances, as well as ends of floor joists. Termites can

work through lime mortar and gain access to interior framing and millwork. Houses without basements built in early days are especially prone to suffer from this cause.

A house in Alexandria, Va., built before the Civil War presents an example of difficulty of this kind, and has also brought forth an idea by which it may be cured at a low cost.

The house is a two-story brick house without basement on a level site, with entrance at the street level, and the first floor on a level only a few inches above grade. Ventilators are let in the walls below the floor, and apparently the grade within the walls below the floor is lower than the exterior grade. The ground appears to be a soil which is rather wet all the time, although there is a fair drainage of the area keeping pools from forming nearby.

Various ideas might occur to architects called as consultants in such cases, which include ripping off the plaster, waterproofing the entire wall, and then applying new plaster, which might be necessary if the plaster has deteriorated seriously. Along with this might go a treatment of the exterior wall with one of the transparent waterproofing solutions or painting with a waterproof paint, and a coating of the subgrade wall with an asphalt coating down to the footings, after excavating a trench around the building to the necessary depth. The last named is the usual method.

In the Alexandria case, however, there was a limit on the expenditure which precluded the more extensive methods indicated, as well as conditions which made the more extensive operations more difficult than would be ordinarily the case.

The remedy finally developed by L. B. Turner, an Arlington, Va., contractor, to fit the pocket-book of the owner and the existing conditions, was to take off the base board and shoe at the first floor throughout the building (most of the grounds to which this was secured having rotted away), and forming an opening through the wall immediately above the floor level by removal of

(Continued to page 110)



ABOVE: Interior of old house with solid brick walls laid in lime mortar showing damage due to water drawn from foundation by capillary action.



RIGHT: With a cross-cut saw short sections of mortar are readily removed; a second workman is inside on the other end of saw. Strips of sheet copper and asphalt roofing are inserted as the job progresses around the building to give a moisture barrier.

SHOPCRAFTER'S Corner

Things To Build for Profit or Pleasure

Plans for a Suitcase Tool Box

SINCE publishing a letter in the November, 1938, *American Builder*, in which one of our readers wanted to know where he could get plans for a portable carpenter's tool case, there has been considerable interest shown on the part of other readers in this subject. The original letter as published is as follows:

Elyria, Ohio.

"To the Editor:

"I think you are in a position to tell me where I can get plans for a portable carpenter's tool case.

"Will gladly pay for plans that would result in my having a case that would always be just right. Would you please let me know if you can?"

C. H. HANCE.

Among the replies received was the following, together with the detailed plan as shown below:

Ottumwa, Ia.

To the Editor:

In the November issue of *American Builder* a Mr. C. H. Hance of Elyria, Ohio, asked for a drawing of a suitcase tool box.

I happened to have a tracing of one of my own that has seen a lot of service, so sent one to him. Am enclosing a letter that he sent me in reply so guess he was satisfied.

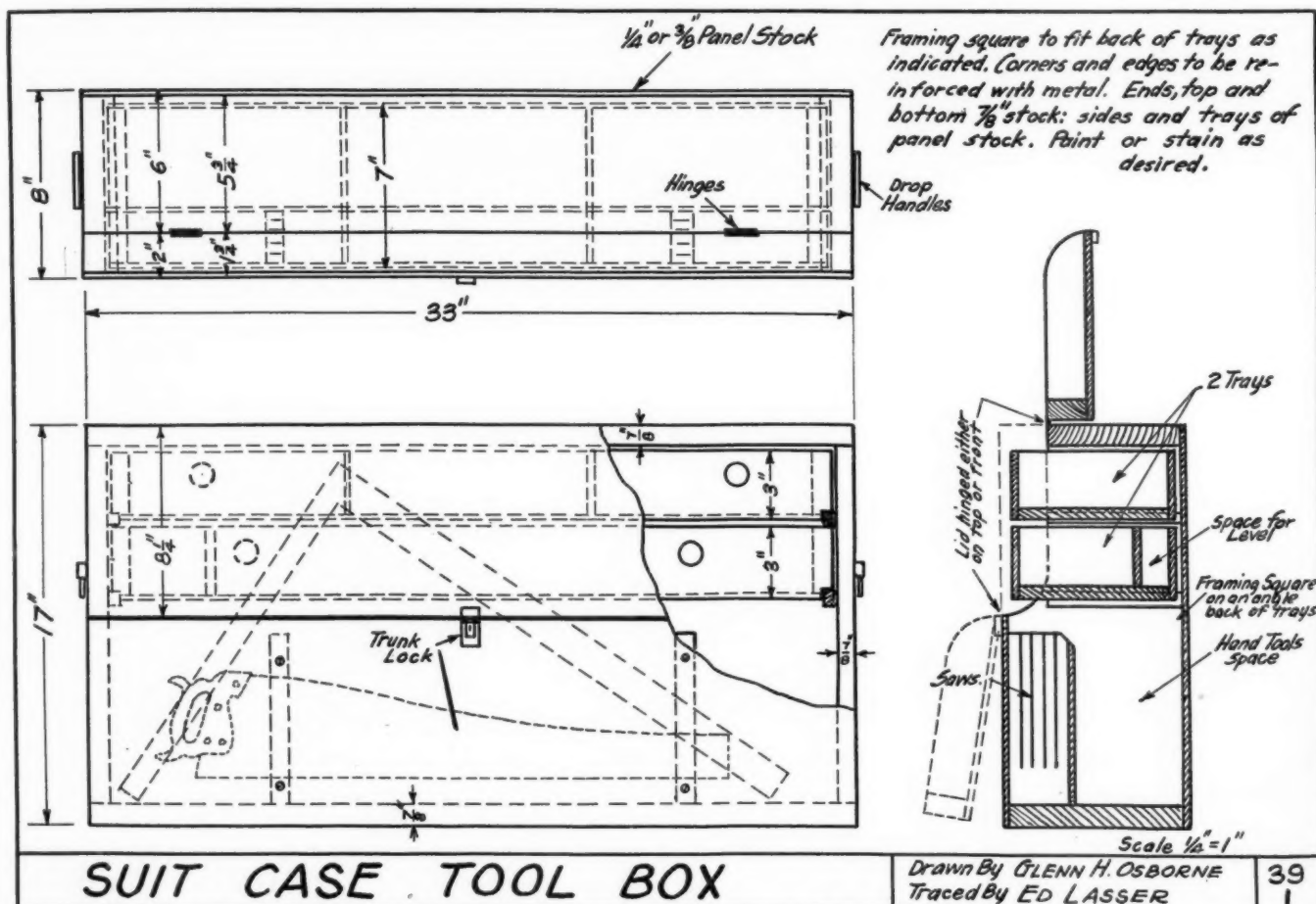
I note in an *American Builder* every now and then a section given over to shop kinks, Shopcrafters Corner, etc. Possibly a drawing of my tool box might fit in there. Anyhow I am sending it along under separate cover and you can use it if you wish. If unable to do so return it to me and I can send it in to another magazine.

We use the *American Builder* magazine a lot in classes and find it a big help not only as a reference book but as a text. We have had it in our library here in school for many years but do miss the so-called "bonus" books that are given for new subscriptions. Ours is evidently issued through an agency as I have never received the plan books and we could use them very much.

GLENN H. OSBORNE,

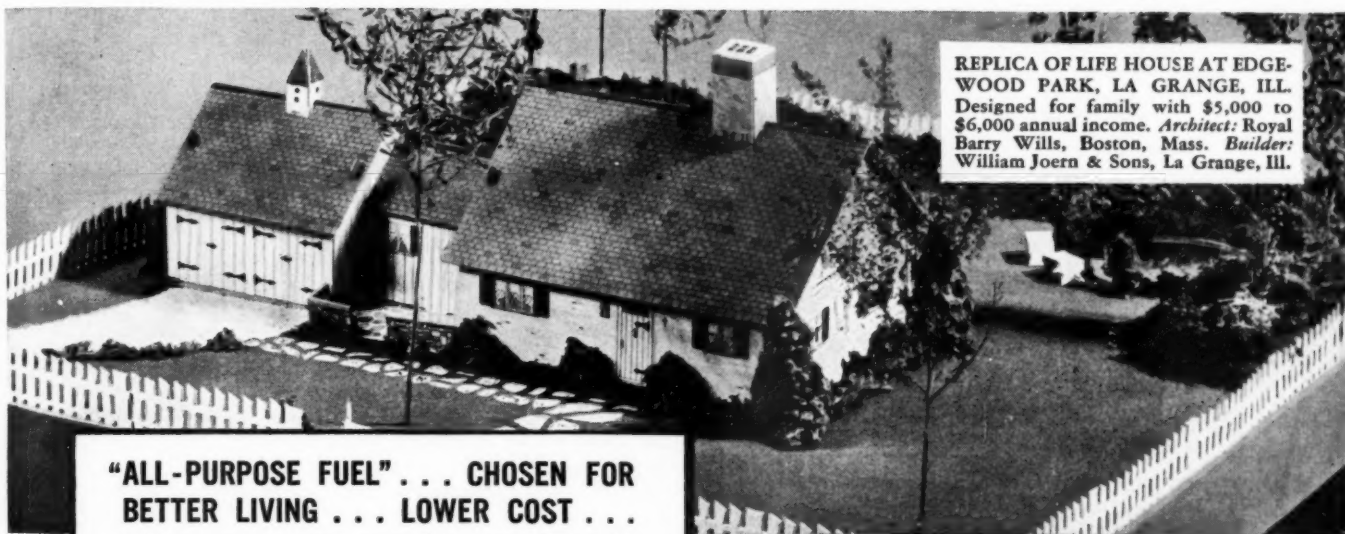
Mechanical Drawing Instructor, Ottumwa High School.

The set of prints, very kindly forwarded to Mr. Hance by Mr. Osborne, was just what he had been looking for. They are reproduced below for the benefit of other interested builders.



THE ABOVE PLANS FOR A SUITCASE TOOL BOX were submitted by Glenn H. Osborne, mechanical drawing instructor, Ottumwa High School, Ottumwa, Ia., in reply to an inquiry about such a project from an "American Builder" reader.

ANOTHER **LIFE** HOME USES **GAS** FOR THE **4** BIG JOBS



REPLICA OF LIFE HOUSE AT EDGE-WOOD PARK, LA GRANGE, ILL. Designed for family with \$5,000 to \$6,000 annual income. *Architect:* Royal Barry Wills, Boston, Mass. *Builder:* William Joern & Sons, La Grange, Ill.

"ALL-PURPOSE FUEL" . . . CHOSEN FOR BETTER LIVING . . . LOWER COST . . .

When you're trying to make every dollar do "double-duty," you'll find gas saves money all along the line.

You save on the cost of the appliances and on installation, too. The cleanliness and efficiency of this *flexible* fuel permit centralization of major housekeeping equipment. Thus, you can devote more space and money to *living* area.

Compare the new gas appliances with *all others*, and you'll understand why home-buyers now prefer "gas for the 4 big jobs."

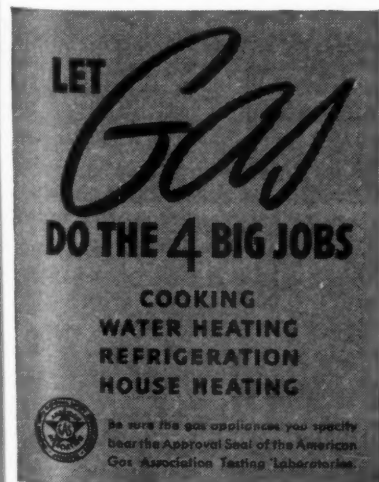
Consult your local gas company for full information about the latest gas appliances.

AMERICAN GAS ASSOCIATION

NOW BUILD AN ALL-GAS HOME \$10,000 IN PRIZES FOR BUILDERS AND ARCHITECTS

All types of homes, new or modernized, are eligible for big prizes. Simple rules. Worth your while!

MAIL ENTRY COUPON NOW!



Competition Director,
American Gas Association, 420 Lexington Ave., N.Y.C.

B-4

Date _____

Last Name _____ First _____ State _____
(Please print)

Address _____ City _____

I wish to enter A.G.A. Builders' Competition. I am a builder ☐

Note: Architects or designers may enter homes in this } Architect ☐
contest with the written permission of the builder. } Designer ☐

Kindly forward complete details.

Signature _____

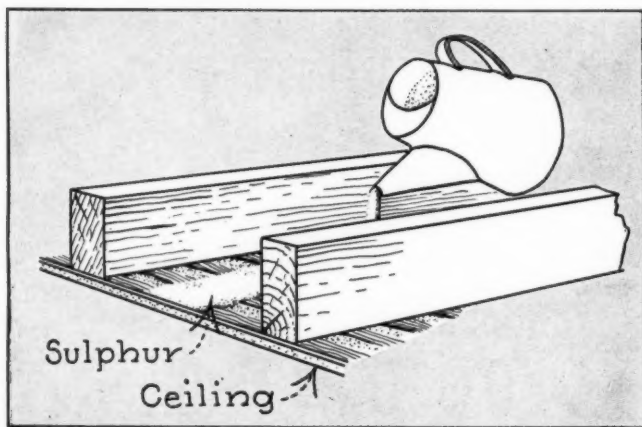
PRACTICAL JOB POINTERS

A READERS EXCHANGE of tested ideas and methods, taken from their own building experience. Two dollars or a year's subscription to American Builder is paid for each time when published. State business connection or trade.

Sulphur Grout Repairs Loosened Plaster

WHEN a section of plaster comes loose from the ceiling due to improper keying, or because of unusual jars or shocks, there are two things to consider—danger to inmates and cost of replastering and redecorating. That is what the engineers at Grand Coulee were up against, because heavy blasting day after day was loosening the plaster of the ceilings in their town.

The number of ceilings affected was sufficient to warrant some real experimenting. First they built a test "ceiling" a yard square, lathed and plastered it, but purposely put on the plaster without keys. Then they tried out a great many substances and mixtures that might, when applied, hold the plaster in place. Finally, the one thing that would do the trick was found to be melted sulphur. They poured the sulphur on the lath side and



MELTED sulphur poured above ceilings holds loosened plaster.

when it was cool were gratified to find that it would hold. It is almost unbelievable, but the unkeyed plaster so treated afterwards sustained a weight of 240 pounds per square foot.

Apparently the sulphur at the melting point flows down between the lath and the plaster key, penetrating to the underside of the lath. Cooling, it forms a sort of rubbery paste, which cements the lath and plaster, with the above results.

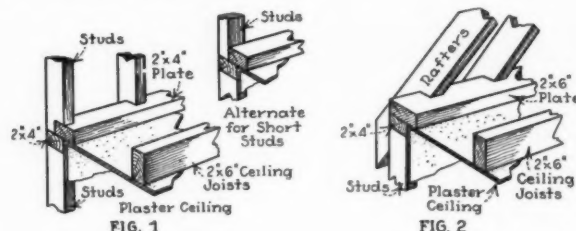
But it was suggested that the sulphur would constitute a fire hazard until it was pointed out that sulphur is not especially easy to ignite and the lath would ignite much quicker. Furthermore, sulphur, which is slow-burning, gives off strong, penetrating fumes, which might be an early warning in case of fire.

This point settled, they went at the houses. The method is to place a number of 2 by 4's against the ceiling in the form of a spider. Under the spider, two or three 2 by 4's are stood on end between the ceiling and the floor to force the loosened section of plaster back into place.

Sulphur is then melted in an open kettle in the yard and the liquid retains its heat and fluidity long enough to be taken up into the attic and poured from an ordinary sprinkling can snout. A strip about five or six inches wide is poured between the joists. It was found that 20 to 25 pounds of sulphur per room was enough, when the whole ceiling was treated as a preventive as well as a cure. In the case of already damaged ceilings, the saving was considerable. In a typical house it cost \$25 to make the repairs with sulphur grout and apply it over the whole, whereas to replaster and after that redecorate would have cost approximately \$200.—HENRY W. YOUNG, Portland, Ore.

Framing Ideas Save Labor and Material

I AM submitting the following two ideas for better jobs: Figure 1 (below) represents the gable end of a house of wood construction where the joists run parallel with the wall. You will notice there are two 2 x 4's but one sets in to receive the lath. This makes a better and cheaper angle—saves one 2 x 4 and some labor. If the gable studding are not too long they can be set flatwise and spiked in the rabbett. If the gable is high these studding can be notched and set edgewise. Figure 2 shows the wall on which the rafters are spiked. The top plate in this case is a 2 x 6 flush on the outside and setting in two inches to take ceiling lath. The other ceiling joists are parallel to this wall in this case. This saves a 2 x 4 and lots of labor.—A. T. MONTGOMERY, Wichita, Kans.

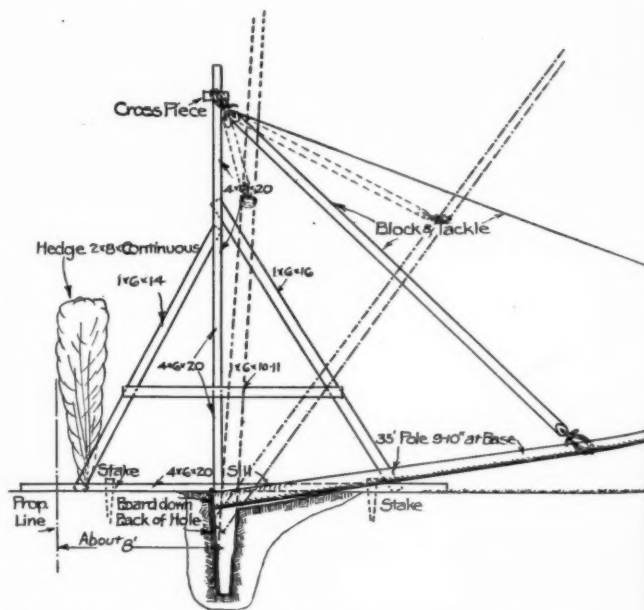


GABLE and plate framing claimed to give better, cheaper job.

Erecting 35-Foot Pole

A CARPENTER here had the job of putting up a 35- to 40-foot clothes pole back of an apartment house. He erected a modified A-frame, and put the pole up quickly and easily as follows with no other equipment than a block and tackle.

The upright and base of the frame were 4x6x20 sill timbers he had on hand. These were fastened together and braced as shown in the sketch. After it was built it was set upright, then slid as far to the rear of the property as the hedge would allow, then several stakes driven deeply into the ground held it, while side ropes guyed it. A board was slid down into the back of the hole for the butt of the pole to bear against. As soon as the pole reached a 45-degree angle the butt bore on the back board so little that it was possible to pull this board out, then the hoisting was completed. After the pole was up, the frame was taken apart carefully and barring a few nail holes, all the lumber was practically as good as new. These tall poles are mean to handle, and carpenters may wish to remember this quick, simple, inexpensive way of erecting them without much assistance.—MORRIS HALL, White Plains, N.Y.



METHOD of erecting tall clothes pole with simple equipment.



MUELLER GIVES THE PUBLIC WHAT THE PUBLIC WANTS

1 Gas Heat. Buyers thrill to the beauty and efficiency of Mueller Climatrol Air Conditioning Furnace. This one compact unit warms, filters, humidifies and circulates the air within the home at a cost no greater than for heat alone.

Heat Speeder, Mueller's exclusive steel Gas Furnace Section, transfers heat six to eight times faster than old style units. Mueller also offers Climatrol, Jr. and Flor-Aire for small homes.



2 Oil. Mueller's streamlined Series "O" complete Air Conditioning Oil Furnace of patented design, sets new standards of efficiency. Secures complete combustion; delivers more heat from fuel; cuts cost of operation. Learn about this great innovation.



3 Coal. Mueller engineering has set the pattern for efficiency in coal-fired equipment for hand or stoker firing. Newly developed model especially for use with stoker eliminates fly ash, simplifies clinker removal. Mueller Fan and Filter units can be added to existing furnaces.



4 Consistent National Advertising in magazines now carries news about Mueller achievements in heating equipment to more than 3,000,000 homeowners interested in building and modernizing their homes.



**GOOD BUY-
ING MAKES
SELLING
EASIER**

Write today for
Mueller's complete,
condensed catalog.

**L. J. MUELLER
FURNACE CO.**
2016 W. Oklahoma Ave.
Milwaukee, Wis.

MUELLER  MILWAUKEE

HEATING AND AIR CONDITIONING
COAL · OIL · GAS

BUILDERS who know Mueller have supreme confidence in the service which Mueller heating equipment delivers to users.

MUELLER ENGINEERS experiment with a purpose. They first know what the homeowning public wants. Then they work out ideas for producing the kind of heating equipment that will meet those wants.

PROGRESS COMES ABOUT when engineering makes the "impossible" not only possible, but also inexpensive, efficient and foolproof.

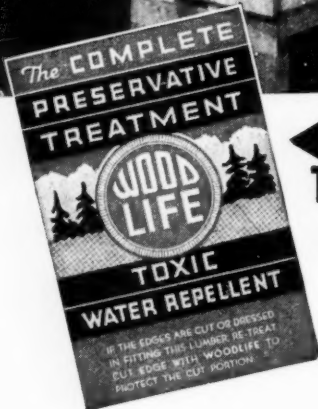
TODAY the public wants automatic heat and air conditioning. Mueller is ready with a full line of furnaces, fan and filter units and air conditioning equipment.

H. P. MUELLER, President

PRESERVED and PROTECTED FOR LONG LIFE

AGAINST . . .

**WARPING
SWELLING
CHECKING
DECAY
STAIN**

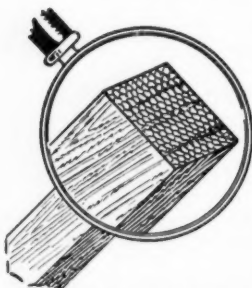


← **That's What
This Sticker Means
on the Millwork
You Use**

A safer job for you because you escape the usual service complaints, windows swelling and sticking, doors warping, trim checking—and always the danger of that ugly black growth called Blue Stain.

Carloads of millwork bearing WOODLIFE stickers are going daily to lumber yards from which you buy your materials. This millwork is better—it will endure. It is treated with WOODLIFE, known among the mills as the treating solution par excellence, the complete treatment. It provides protection against swelling, shrinking, warping, and end checking in addition to preventing decay and stain—and, also important, keeps the wood dry and smooth with no grain raising when you build in wet weather.

Re-Treat Trimmed Edges



WOODLIFE is making news in the building industry. Write for the full story about this treating solution—standard everywhere.

—after you trim treated doors (as an example). Note the porous structure of end grain—that's where moisture soaks in and starts all the trouble.

Thousands of builders are using WOODLIFE in small homemade tanks, or by a liberal brush application, on millwork not already treated—trim, siding, cabinets, mantels, etc. Your cost of insuring yourself against complaints is slight and the improvement in the quality of the wood is enormous.

Protection Products Mfg. Co.

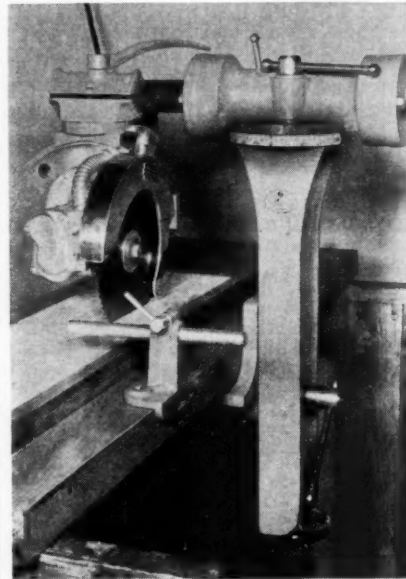
Mfrs. of PRESERVATIVE SOLUTIONS for **17** Years
Research Laboratory and Plant KALAMAZOO, MICH.

New Products in the Building Field

New Multisaw Arm for Power Saws

POWER KING Tool Corporation, Warsaw, Ind., has announced the new Multisaw arm with which any Power King saw, 8 to 11 inches inclusive, can be used. Several new convenience features are introduced which speed up all types of saw jobs.

The new Multisaw arm is rigid, accurate, easy to set up and operate, easy to move to the job. It will cross cut, rip, mitre, bevel, compound mitre, bevel rip, etc. Equipped with an abrasive disc, it will cut or score tile, brick, slate, stone, marble, etc. Perfect alignment of blade or disc

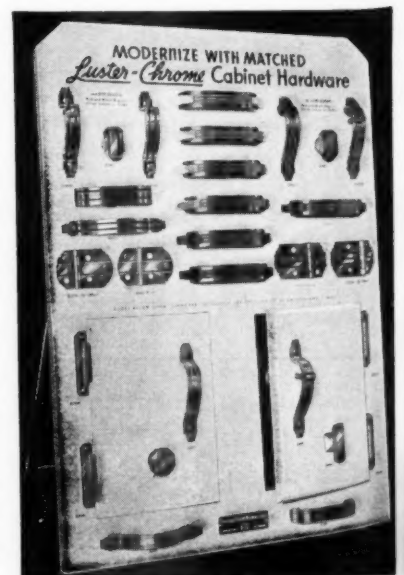


eliminates friction or binding. The slide bar rides smoothly on eight sealed ball bearings and has a 28-inch stroke. The swiveling head is graduated from 0 to 60 degrees both ways, and the saw mounting bracket is graduated for accurate mitre cuts. Saw elevation is adjustable up to 9 inches.

MULTISAW arm mounts any Power King electric hand saw to give an increased range of usefulness.

New Luster-Chrome Hardware

A NEW DEMONSTRATOR has been introduced by the American Cabinet Hardware Corp., Rockford, Ill., to show its new line of attractive Luster-Chrome cabinet hardware. The colorful display of de luxe pulls in ivory, yellow, green, delphinium blue, red, and ebony black demonstrates the actual application of various types of cabinet hinges, pulls, catches, etc., on operating doors, and shows three distinct design groupings at graduated price levels for every purse and purpose, each of the groupings perfectly matched in design.



NEW display panel offered to dealers to demonstrate colorful new line of Luster-Chrome hardware as applied; convenient size allows carrying out to sell "on the job."

PERFORATED ROCK LATH

THE FIREPROOF LATH



Typical ARE THESE FINE JOBS IN FLORIDA

Perforated Rocklath* sells for little, if any, more than the cheapest kind of old-fashioned plaster lath—possesses many advantages over it.

... gives superior construction—PLASTER becomes WELDED and RIVETED to lath

... provides added fire resistance because of its fireproof qualities

... is adaptable to any type of structure—store, home, office, hotel

No wonder the popularity of Perforated Rocklath is increasing by leaps and bounds.

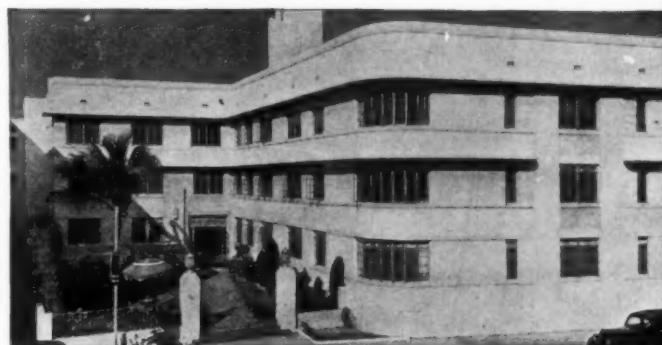
To use Perforated Rocklath on your next job, whether it be hotel, store, apartment, office, home, is automatic assurance of finer walls at a reasonable cost.

Write today for complete information on this remarkable new fireproof lath.

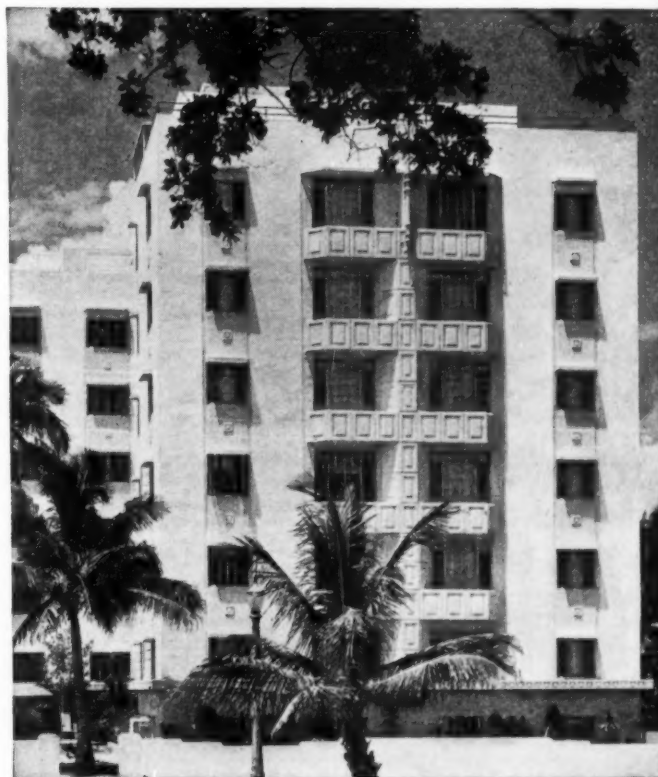
UNITED STATES GYPSUM COMPANY

300 West Adams Street, Chicago, Illinois

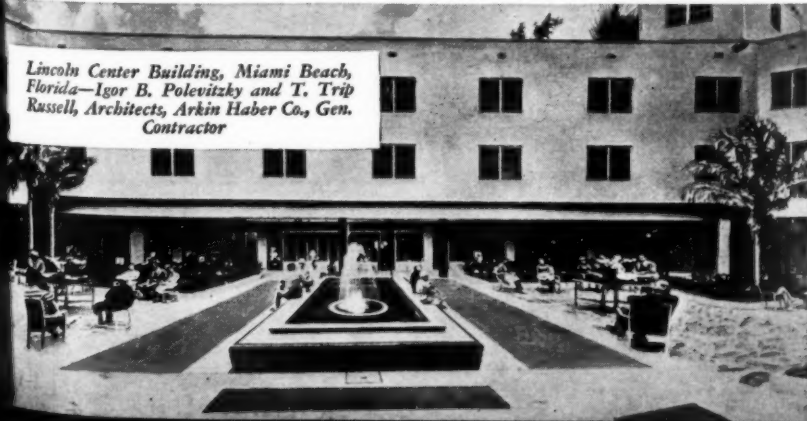
*Registered Trade-Mark



Croydon Arms Hotel, Miami Beach, Florida—Roy F. France, Architect.
Carl Green, Gen. Contractor



Barbizon Hotel, Miami Beach, Florida—L. L. Robenson, Architect. O'Neil
Orr Const. Co., Gen. Contractor



Lincoln Center Building, Miami Beach, Florida—Igor B. Polevitzky and T. Trip
Russell, Architects, Arkin Haber Co., Gen.
Contractor



UNITED STATES GYPSUM COMPANY
300 West Adams Street, Chicago, Ill.

Please send me complete information on Perforated Rocklath

Name

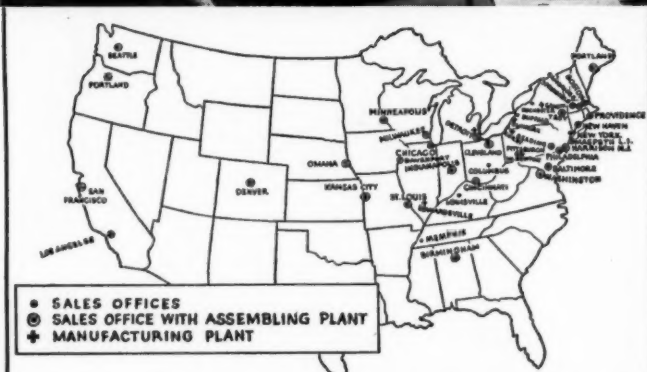
Address

City State AB-2

NO DAYS LOST Waiting For U.S. Deliveries

What heating
equipment did
you decide on?

U-S of course!
We can be sure
of quick service



Huge warehouse stocks from coast to coast in every important market center make "pick-ups" possible at any time . . . assure prompt shipments the day your order is received.

BUILDERS can rely on U.S. for warm air, hot water and steam heating equipment for every job . . . without delay . . . without lost time. Eight busy factories, thirty factory branches and hundreds of local sales offices are ready to serve you. Ample warehouse stocks make overnight shipment the rule. And the quality of U.S. products is a plus value in every home you build or sell. Write for complete information.

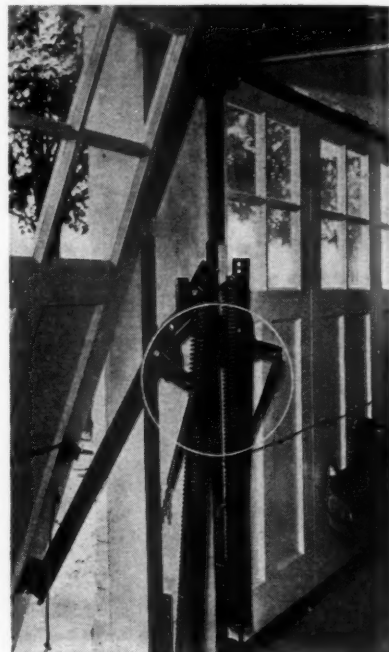
UNITED STATES RADIATOR CORPORATION

General Offices: Detroit, Michigan
Branches and Sales Offices in Principal Cities

New "Self-Starter" for Garage Doors

TO ACCOMPLISH automatic opening of up-and-over type garage doors, the Frantz Mfg. Co., Sterling, Ill., has developed a simple lever and spring member for its door equipment. This improvement is offered at no increase in cost to the dealer or consumer.

To open a door on which "Over-the-Top" door equipment is installed, simply loose the latch, the door starts, rises and stops without help from hands.



IN THE CIRCLE shown at the center of illustration, two small levers and springs can be seen. These supplementary members on "Over-the-Top" garage door hardware start the door up when latch is released.

Special Stainless Steel Bathtub

THE Elkay Manufacturing Co., Chicago, manufacturer of "Sturdibilt" stainless steel kitchen and cabinet sinks, recently was asked to solve an unusual problem by the Weil-McLain Co., Chicago. This plumbing supply house had received an inquiry from Mr. John C. Happ, a plumbing contractor customer of Maywood, Ill., asking if it were possible to obtain a stainless steel bathtub.

Because this bathtub was to be installed in a remodeled home and the arrangement of the bathroom necessitated placing the bathtub lengthwise of two joists, instead of across them, it was necessary to install a bathtub that was strong and sturdily constructed, yet light in weight.

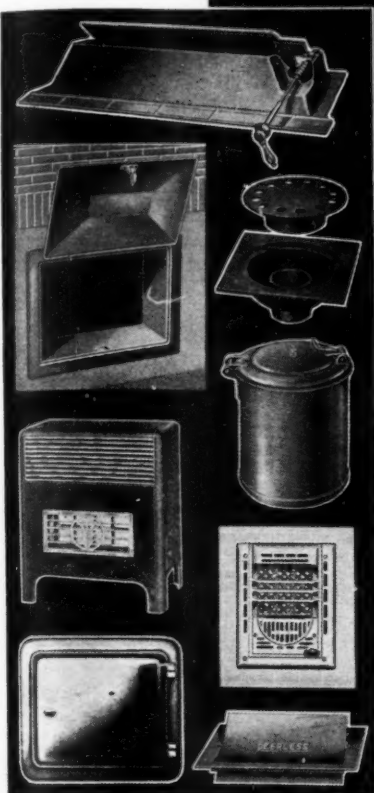
The big job for the manufacturer, however, was to build a bathtub that would be absolutely free from visible joints, seams and overlapping flanges—a tub so smooth, both inside and out, that a person getting into or out of the tub would not be in danger of injury. Also it was not to show yellow hard water stains. The Elkay Manufacturing Co. built such a tub which has been installed in the home of Mr. George Siebenhaler of Maywood, Ill., and has met every demand of the owners.



BATHTUB of stainless steel is light, strong, smooth and stain proof.

PEERLESS

BUILDING SPECIALTIES



FOR LIFETIME SERVICE INSTALL PEERLESS

Peerless Building Products meet every demand for quality in the modern home.

Dome Dampers. Coal Windows. Floor Traps. Garbage Receivers. Gas Wall Type Heaters. Circulating Heaters (gas fired). Ash Pit Doors. Ash Dumps.

Our complete line carried in stock at all times assures prompt delivery. Write for illustrated literature.

FIREPLACE ACCESSORIES

ANDIRONS • SCREENS • BASKETS

A Peerless Dome Damper is essential to efficient fireplace operation. It seals the chimney flue when the fireplace is not in use. Prevents back drafts—smoke and heat loss.

Our line of Andirons, Fire Screens, Fire Baskets and accessories is most complete—Colonial, French, English and Modern design.

Write for special catalog today



PEERLESS MANUFACTURING CORP., LOUISVILLE, KY.

BUILDERS—WRITE TO-DAY FOR FREE CATALOG



Glazed With Clearlite

Like thousands of other fine homes, this residence is glazed with Clearlite—an assurance of lasting satisfaction in Window Glass. Perfectly flat, crystal clear and with a natural brilliant fire polish, Clearlite is a fine glass for fine homes. There is no better Window Glass made. Specify Clearlite and be convinced.

FOURCO GLASS CO.

General Offices: CLARKSBURG, W. VA.

Branch Sales Offices: NEW YORK • CHICAGO • DETROIT • FT. SMITH, ARK.



MAKE BIG MONEY ALL YEAR 'ROUND

with an AMERICAN FLOOR SANDER

You can turn a lean, cold winter into one of your most profitable seasons by the "American Method" of floor surfacing. Get into something for yourself and put all the profits in your own pockets.

INSIDE WORK

Floor sanding is pleasant inside work and there are always many resurfacing jobs to be had in the older homes when "new building" is slack. An American drum-type sander driven by a powerful electric motor does all the work.

NO LAY-OFFS

You are working for yourself—no fear of being "fired"—the success you have depends on your ambition to get ahead in the world! Don't delay but investigate this American Money-Making method of floor surfacing today. No experience is required and as little as seventy-five dollars starts you in for yourself. Fifteen to twenty dollars a day clear profits are not unusual. If others can, so can you!

FREE DETAILS

Get details on the "American Method"—prices and full information by sending in coupon below. You are not put to any expense or obligation—in fact, we're more than glad for the opportunity of answering your questions.

THE AMERICAN FLOOR SURFACING MACHINE COMPANY

511 So. St. Clair Street • Toledo, Ohio

Gentlemen:

- ☐ Send complete details and prices on your American floor sanders without any cost or obligation to me whatsoever.
☐ I am a contractor and would use sander in own work.
☐ I am thinking of getting into business for myself.
☐ I already own one—quote trade-in value on new sander.

Name

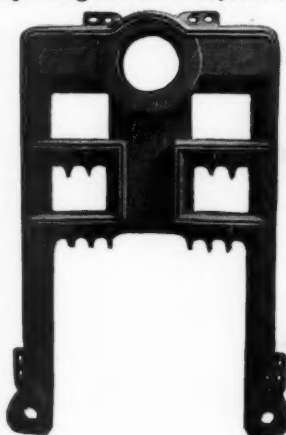
Street

City State

New Yello-Jacket Boiler

THE Burnham Boiler Corp., Irvington, N.Y., has developed a new boiler, called the Yello-Jacket not alone because of its yellow jacket but because it "stings the fuel bill." Its radical departure in design was based on accomplishing five main objectives as follows: Making a boiler that would operate freely on the small chimneys that are so much employed these days; providing a boiler that would trap the flue travel in such a way as not to unduly retard the active passage of the flue gases, but at the same time so retard or hold them as to cut down chimney losses; giving a fuel economy with oil, gas or coal; making it easily convertible, at low cost, for coal or oil; providing a flexible jacket combination for the optional enclosing of oil burner.

BOILER section with expanded direct surfaces for full economy.



Zoned Winter Conditioning Unit

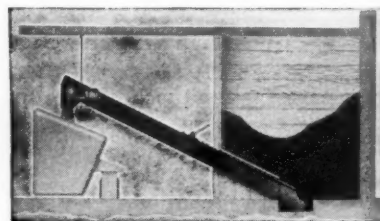
THE Payne Furnace & Supply Co., Inc., Beverly Hills, Calif., has announced a new Zoneair unit, a compact winter air conditioner that heats, circulates, cleans, ventilates and humidifies. In addition, the Zoneair unit offers true zoned winter air conditioning. Units may be used singly or in batteries of two or more, each furnace operating independently and servicing separate rooms or suites at the exact temperature desired.

All moving parts of the new Payne Zoneair unit are mounted on rubber to eliminate vibration. Long hour G-E motors give smoother operation, and an oversize fan gives more efficient air delivery through the unit. The unit has 25 per cent more filter area, is enclosed in a streamlined, sapphire blue and black kinkle enameled casing. It is available in six sizes, from 60,000 to 200,000 B.T.U. input rating.

Automatic Stoker Loader

AN AUTOMATIC loader to fill stoker hoppers is new equipment added to its line of machinery items by D. J. Murray Mfg. Co., Wausau, Wis. With a capacity up to 10 tons of coal per hour, this loader can be adjusted to meet stoker room requirements; distance from the coal pile only governs the length of the loader. It can either be suspended from the ceiling or supported by a stand from the floor. In principle and operation this loader is simple, safe and dependable as a labor-saving device; sturdily built, it uses electricity only the few minutes necessary to fill the stoker hopper; it is equipped with 1½ H.P. motor.

AUTOMATIC stoker loader for office, public and industrial plants.



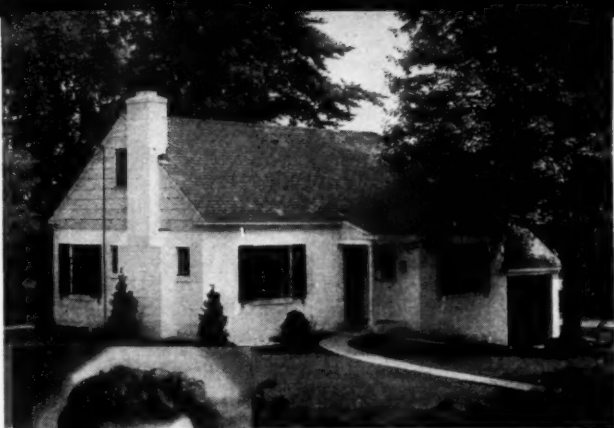
Wood Preservative and Finish

LIGNOPHOL, a wood preservative and finish manufactured by L. Sonneborn Sons, Inc., of New York, was one of the preservatives used in recent tests at the University of California conducted over a period of 54 months upon the subject of the paintability of woods treated with different preservatives that are termite-repellent. A wooden panel which was found to be free from any signs of warping or cupping, after fifty-four months' exposure, had been treated with this product.

The conclusion can be reasonably drawn that these tests amply justify a little extra expenditure for a preservative which will prolong the life of wood whether it is to be painted or left unpainted. Also, brushed on, Lignophol is a permanent finish whose use enhances the inherent beauty of the wood itself.

RECORD-BREAKING YEAR
AGAIN PROVES....

Home buyers
want CONCRETE



John W. Fries, general manager,
Alden Estates, Inc. . . (Above)
typical concrete house design.

CONCRETE'S rising popularity among home buyers is indicated by the fact that 35,000 concrete homes have been built in the past three years. And among builders of concrete homes, the story is the same; their number has *tripled* in the last two years!

The success-story of John W. Fries, general manager of Alden Estates, Westchester County, New York, is typical. Here are his own words:

"We sought durable construction that would be economical to build, have a low rate of depreciation, require little maintenance and be easy to heat. Furthermore, we wanted a building material with which our architects could design houses of *permanent* charm and individual character. Concrete walls and floors met our needs exactly, so we built one model to demonstrate our ideas."

The result at Alden Estates was a flood of inquiries and sale of 51 concrete homes in 11 months ranging from \$6500 to \$8500.

America is turning to enduring, economical concrete. People like its beauty and year 'round comfort . . . its protection from fire, storms and decay . . . its rigidity that does away with sagging walls, creaking floors, sticking doors and windows.

Who'll be "out in front" with concrete in your community? It's your big profit opportunity. Write us for further information on the sales advantages of concrete homes.

PORTLAND CEMENT ASSOCIATION
Dept. A2-3, 33 West Grand Avenue Chicago, Ill.

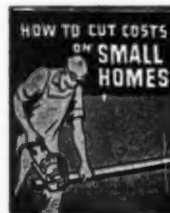
A National Organization to Improve and Extend the Uses of Concrete

Buy a SKILSAW and you'll take the short cut to profits . . . it will save you half the sawing time and cost on ALL your jobs . . . will bring more jobs to you . . . will enable you to quote lower, yet show a profit!

Make no mistake—there is no other saw like the modern SKILSAW! It out-cuts all others under heavy loads. It is lighter and easier to use. It saws faster and deeper on any kind of cut you need. It's *better in every way* . . . because it represents 19 years of improvement on the first portable electric handsaw, introduced by us in 1920. Cuts wood, metal, stone and compositions. 9 POWERFUL SIZES.

Sold by leading distributors of mine, mill, hardware and contractors' supplies.

SKILSAW, INC., 5031 Elston Ave., Chicago
214 E. 40th St., New York—52 Brookline Ave., Boston—
1420 Spring Garden, Philadelphia—2134 Main St.,
Dallas—918 Union St., New Orleans—1355 S. Flower
St., Los Angeles—2005 Webster St., Oakland—Canadian Branch: 85 Deloraine Ave., Toronto.

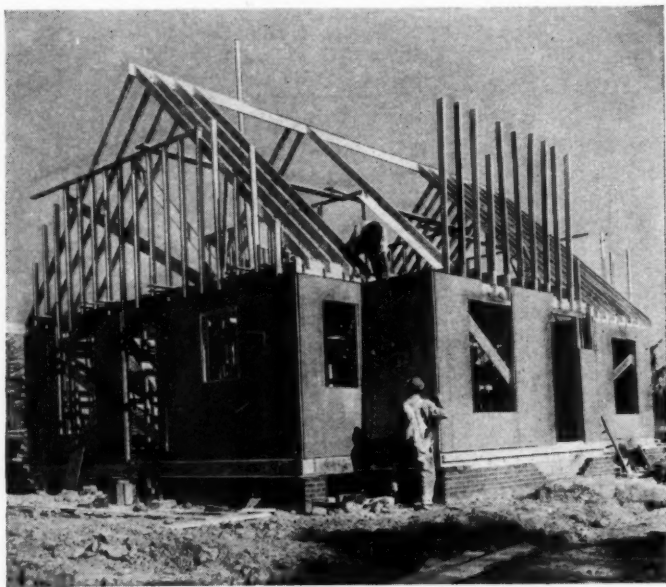


SEND FOR THIS BOOK-LET—shows how even homes that sell under \$5,000 can be well built for less with SKILSAW—FREE TO BUILDERS!



NEW-TYPE SHEATHING offers extra advantages!

Armstrong's Temseal bars vapor infiltration
with factory-seal of both asphalt and paper



Owners and builders alike discover
TEMSEAL provides unusual strength

YOU can leave competition behind when you offer your prospects the extra advantages of Armstrong's Temseal Sheathing! For here is an insulating board which has *both* asphalt coating and strong paper reinforcement—the only sheathing of its kind.

Armstrong's Temseal is made from Temlok, the highly efficient fibreboard insulation. It has unusual strength, high resistance to air and moisture infiltration, and exceptional insulating efficiency. The factory-applied seal makes it unnecessary to use building paper or felt. Temseal adds strength and rigidity to the building and offers additional advantages to both builder and owner, at no extra cost. It is available in the standard sheathing thickness of $2\frac{5}{32}$ " and in sheets 4' wide by 6', 7', 8', $8\frac{1}{2}$ ', 9', 10', and 12' long.

Let us send you complete details of this new Armstrong's Temlok Product. Write today for sample and full details. Armstrong Cork Co., 1218 State St., Lancaster, Pa.



Armstrong's
TEMLOK INSULATION
DE LUXE INTERIOR FINISHES
LATH
TEMSEAL SHEATHING

News of the Month

Building Activities and Meetings

December Construction Volume at 10-Year Peak; Residential Figures for First Half of January Double Same 1938 Period

WITH a construction volume of \$389,439,000 for December, 1938, as reported by F. W. Dodge Corporation, new work started in the closing month of last year reached a ten-year peak. Not since 1928 has any December total of construction contracts awarded equalled that for December 1938. This figure indicated a gain of 86 per cent over December 1937, and an increase of 29 per cent over November 1938.

Of the December contract total, \$279,403,000 represented public construction with a 142 per cent increase over December 1937, while \$110,036,000 represented privately owned projects with a 17 per cent increase over the preceding December.

The year 1938 closed with a construction contract total of \$3,196,928,000, the largest annual figure since 1930. The gain over the year 1937 amounted to 10 per cent.

In the rush to get PWA contracts awarded before the year's end, many projects that were reported as having been awarded included only fractional beginnings with the principal portions of the projects to be put under contract later. In such cases, contracts were held out of the record until the field staff of the Dodge organization reports the actual letting of contracts for the greater portion or all of the complete project; the aim is to maintain as far as possible the normal lag between this contract record and the purchases of materials and employment.

Figures for the first half of January, 1939, are as follows:

	Jan. 1-15, '39	Jan. 1-15, '38	January, '38
37 Eastern States	\$ 33,059,000	\$ 15,494,000	\$ 36,207,000
Residential	27,014,000	28,869,000	57,448,000
Non-Residential	32,352,000	39,109,000	50,125,000
Public Works	18,729,000	45,185,000	48,451,000
Utilities			
Total	\$111,154,000	\$128,657,000	\$192,231,000

Semi-Annual Real Estate Survey Shows More Activity Than Year Ago; Outlook Bright in Most Cities for 1939

THE National Association of Real Estate Boards' 32nd semi-annual survey, compiled from confidential reports of member boards in 274 cities, shows that the real estate market nationally comes into the year 1939 with a pace that in most factors already matches or surpasses its pre-recession gait.

Four things stand out in the survey findings:

1. Increased supply of capital available for real estate loans, and, even more important, continued tendency to lower interest rates. The survey shows the most generally favorable situation in respect to both interest rates and mortgage money supply that has ever been recorded in the country's real estate history.

2. Beginning, however, of a differential between old and new residential properties due to difference in outlook for financing for these types of properties, a differentiation that city after city reports will be accentuated if FHA financing for existing homes is allowed to go out of existence on July 1, 1939 (as it will unless Congress acts to extend the date).

3. Undersupply of single-family dwellings in 34 per cent of cities, despite the revival of home building and despite the appreciable new doubling up of families which accompanied business recession.

4. Substantial activity in the market for home sites, evidence of preparation of family after family for new home building. Measurable up-swing here, despite the recession in general business activity which began in the last months of 1937, is indicative of the underlying strength of the real estate outlook.

Other cardinal points as to today's situation:

Market activity higher than last year at this time in 33 per cent of the cities reporting, and abreast of the rate which opened last

(Continued to page 92)

Easier TO BUILD—CIRCULATES HEAT—

BUILD EVERY

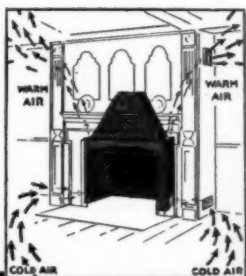
Fireplace HEATILATOR

AROUND THE



Here is a fireplace that is much simpler and easier to build. It saves labor, firebrick and other materials. It actually *circulates heat*, warms every corner of the room and even adjoining rooms. And it cuts heating costs, spring and fall.

The Heatilator is a simple, durable heating chamber made of heavy, fire-resisting steel. It is inclosed in the fireplace where it serves as a correct metal form for the masonry. Thus it guards against errors in design. It provides a perfectly smooth smoke dome, to insure freer passage of smoke. *The Heatilator Fireplace WILL NOT SMOKE.*



PROVED all over America!

Thousands of Heatilator Fireplaces are in successful use throughout the country. They have proved their worth over a period of years. Owners are enthusiastic about them. They report savings in home heating costs, weeks longer use of camps, and heating problems solved in basement game rooms. Builders find the Heatilator Fireplace a helpful selling feature. Heatilators are sold by leading building-supply and lumber dealers everywhere. Write now for complete information and installation data.

HEATILATOR COMPANY
822 E. Brighton Ave., Syracuse, N. Y.

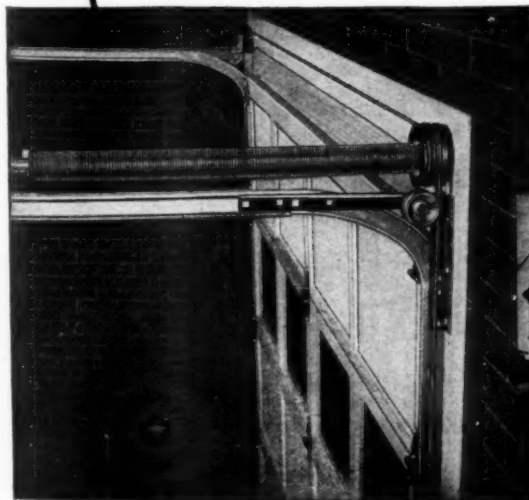
WRITE TODAY for complete
Heatilator information and installation data.

So SIMPLE to Install!

Instead of two springs to supply lifting power to the two sides of the Ro-Way Model "J" Door, we use only one Ro-To Live Spring. This greatly simplifies installation. Vertical tracks attach directly to the door jamb. No track brackets are used. Headroom requirement is only 9" to 14", and sideroom requirement, only 3 3/4". You will appreciate the time saved, and resulting extra profit when you install the Ro-Way Model "J" Door.

So SMOOTH in Operation!

The Ro-To Live Spring, which operates the Ro-Way Model "J" Door, is a single powerful coil, but both ends work. There are no dead ends. This means a smooth, evenly-balanced lift to both sides of the door at exactly the same time . . . always. Energy from each end of the live floating spring is applied to each cable drum . . . one drum revolves clockwise, the other counter-clockwise. The result is amazingly smooth, quiet-coasting action.



Other Models of Ro-Way Doors are available for all sizes . . . all buildings . . . electrically operated, if desired.

New Rō-WAY Model "J" with Rō-Tō Live Spring

—requires no turnbuckles or other adjusting devices. The door is always in perfect balance. Side-drift and dragging are impossible. It remains permanently plumb and free-running. To insure the utmost quiet in operation, cast-steel preformed lifting cables are used, and the ball-bearing steel track rollers have built-in rubber tires that will not stretch nor become loose.

Write for descriptive folder
and price list

ROWE MANUFACTURING CO.
776 Holton St. Galesburg, Ill., U.S.A.



YOUR MONEY CAN'T BUY A BETTER SALES POINT!

The Low-Cost Protection of Wolmanized Lumber* Helps You Sell!



Here's a scene from the day of many an alert builder:

Mary Prospect: Mr. Builder, isn't the price of this house high? We saw one over on Rose-lawn Avenue just as big, and a bit cheaper...

John Prospect: Yes, and over on Fairview...

Builder: Exactly so, I'm glad you mentioned it. This house is priced a little higher, because it will be better built. I mentioned the copper plumbing. Notice also these sills and joists. See the brand? They are Wolmanized Lumber, and that brand means that a special pressure treatment with Wolman Salts* preservative, protects them from damage by decay and termites. The subfloor is Wolmanized, too. That makes your whole house safe against the commonest cause of expensive repairs. It costs a little more, but it's worth a lot...

Exactly so, Mr. Builder! The 2% extra (or less) which you pay to have Wolmanized Lumber in sills, joists, and subfloors, pays you as a sales point, and will save your customer money, too. We can't put the full story here, but will gladly answer your questions, and send a sample of pamphlets which will help you put the story across with your prospects. Address **AMERICAN LUMBER & TREATING COMPANY, 1406 Old Colony Building, Chicago.**

*Registered Trade Mark

WOLMANIZED LUMBER

USED FROM HERE



TO HERE
TO PROTECT THE
WHOLE STRUCTURE

(Continued from page 90)

year in 38 per cent of the cities. (The like survey of six months ago found only 9 per cent of cities more active and 74 per cent less active than they had been a twelve-month earlier. That was in comparison with the post-depression peak activity reached for real estate in May, 1937.)

Selling prices steady in 64 per cent of the cities. Up a median of 10 per cent in about one-eighth of the cities. Still affected by the recession in almost a quarter of the cities. Where they are down the median drop is 10 per cent. (Prices for residential property are forecast to rise during 1939 in 55 per cent of the cities reporting. Rise expected is ordinarily about 15 per cent.)

Rents in the most stable situation of the post-depression period. Capital for mortgage loans seeking investment in 77 per cent of the cities; loans seeking capital in only 13 per cent of the cities. This favorable situation is even more general than at the May, 1937, peak.

Interest rates in 29 per cent of the cities lower than last year at this time, when they were already the lowest in history. In 69 per cent of cities, steady at last year's level. Rising in only 2 per cent of the cities.

Market for subdivision or suburban lots, improved over last year at this time in one-third of the cities reporting. (Decline is shown in only one-sixth of the cities.)

Vacant lots sold for home sites during the year exceeded considerably the number of homes built in the cities reporting. One hundred lots were sold for every 73 homes built. Home site sales averaged one lot for every 243 persons in the urban population.

Home building reported by the identical cities averaged one new single-family dwelling for every 337 people.

Residential Rents Stable

Rents for single-family houses, which advanced steadily from 1934 to the end of 1937, have felt the effect of new residential construction, are stationary in 64 per cent of cities reporting. They are up in 15 per cent of the cities but lower than last year at this time in 21 per cent of the cities. The rise or drop, where it occurs, has been only about 5 per cent in the average city. A 10 per cent rise, however, is reported by one-quarter of the "up" cities, and a 10 per cent drop by over a third of the "down" cities. The national rent level for houses is now about 82 per cent of the level prevailing in 1926.

Apartment rents are in a very stable situation. They are on a level with last year at this time in 69 per cent of the cities, higher in 15 per cent of the cities, lower in 16 per cent of the cities. The median rise is 5 per cent, though 29 per cent of the "up" cities give their advance as 10 per cent. The median drop is likewise 5 per cent, about one-third of the cities where there has been decline giving the amount as 10 per cent.

Apartment rent levels, which have had a comparatively narrow range of ups and downs for the last year and a half, are now at about 68 per cent of the levels prevailing in 1926.

Rents for two-family houses show a situation much like that for single-family dwellings. However, where duplex rates have gone down the drop commonest is 10 per cent.

A shortage of apartments is felt in one-quarter of all cities reporting. Not quite a sixth of the cities now have an over-supply.

Commercial Rents Advancing

Supply of commercial structures is in balance with demand in two-thirds of the cities surveyed, but effect of the recession in general business is still visible in the fact that 25 per cent of cities show excess of space over demand, whereas only 18 per cent so reported as of May, 1937. Business property rents, however, already reflect the expectation of general business advance. While 73 per cent of the cities show stabilized rents, in 18 per cent the rates are higher than they were a year ago, and in only 9 per cent of cities have they had a drop.

Office space lags behind business space in rent recovery but it, also, is beginning to advance. While 88 per cent of cities have stabilized office rents, a rise has taken place in 8 per cent of the cities, a drop in only 4 per cent of cities.

The largest cities lead in respect to rising market activity, the small cities in respect to price rise. Outlook for 1939 is for advanced volume in 88 per cent of cities.

Now Ready

House Construction Details

By NELSON L. BURBANK

Author of "Carpentry and Joinery Work"

This new details book will combine the best features of two predecessors: *Building Age Construction Details* and "American Builder's" *Good Construction*. The material is based largely on reproductions of house construction details which have appeared in *American Builder and Building Age*.

The various sections are presented in construction sequence. They constitute a working guide in detailing every step in the construction of a dwelling, from foundation to finish. Scale drawings and reproductions of photographs, many showing step-by-step procedure, with just enough text to explain general principles, make this book particularly suitable for the carpentry shop drafting room.

Latest building materials, including a large section on veneer paneling, are shown. New equipment, machine methods of assembly of equipment and building short-cuts are pictured. The details represent standardization recommended by housing organizations and other authorities. The complete cross-index will enable contractors, carpenters, architectural draftsmen and students to locate any particular detail quickly.

Chapter Headings

Floor Plans, Sets of House Plans—Excavations, Foundation Forms, Foundations—Sills, Girders, Joists, Sub-Flooring—Outside Walls—Inside Walls—Wall Sheathing, Ceiling Joists—Roof Construction, Bay Construction, Roofing—Cornices, Porches—Exterior Wall Construction—Interior Wall Coverings, Interior Trim—Stair Construction—Windows—Doors—Hardware—Closets, Shelves, Built-In Equipment—Finished Flooring—Chimneys, Fireplaces—Scaffolds—Garages—Heating, Air Conditioning—Elements of Electric Wiring for Modern Homes—Insulation, Sound Proofing—Gates, Garden Furniture—Shopcrafter's Corner—Camps, Cabins, Cottages—Farm Buildings—Wood Connectors—Prefabrication, Modern Building Materials—Painting, Finishing—Modern Homes.

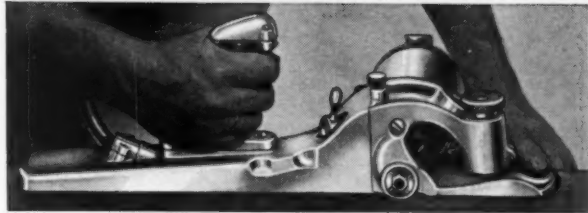
325 pages, illustrated, 8-page index, 9 x 12, cloth, \$3.00.

(Money Back if Not Entirely Satisfactory)
Book Department

**AMERICAN BUILDING and
BUILDING AGE**

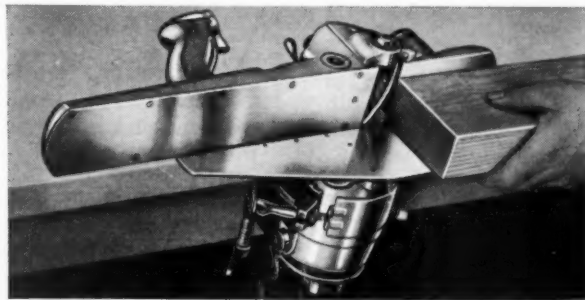
30 Church Street, New York, N. Y.

COST CUTTING EQUIPMENT FOR LOWER COST HOUSING



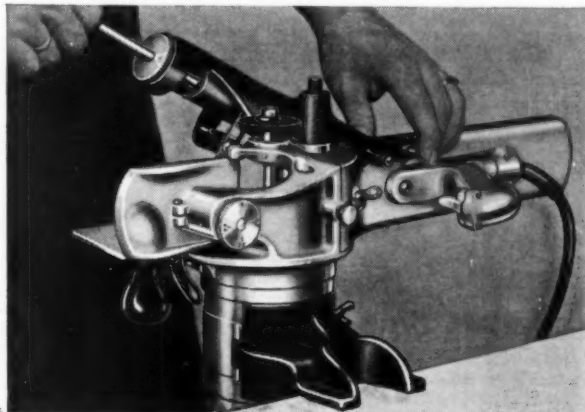
This new Carter Electric Plane is so much faster than hand planing that comparative figures lose their meaning. You have to see it fitting doors, sash, storm windows, screens and transoms to appreciate its cost cutting, profit making possibilities. Mounted in the bench bracket furnished, it instantly becomes a high speed jointer indispensable for inside trim work.

Powered with a 1 H.P. motor it is the largest, most powerful plane on the market. It will plane a surface up to 2½" wide. In spite of its power it is light because it is made from aluminum alloy.



Other features: *Spiral Cutter* makes smooth, waveless cuts with or across the grain without splintering the edges. *Quickly Adjusted* for paper thin or heavy cuts up to 3/16 of an inch. *Sharpens its own cutter*.

Would you like more information on this new electric plane?



R. L. CARTER DIVISION, The Stanley Works
133 Elm Street, New Britain, Conn.

Tell me more about your new powerful electric plane.

Name

Address

CARTER MONEY MAKING TOOLS



STRONGER—Dramatic iron ball experiment and scientific laboratory tests prove WELDBORD has the highest structural strength of any wallboard.



SMOOTHER—No grain raise, therefore no special treatment, no lining necessary for papering. Just size and paste as on plaster, direct to WELDBORD panel.



EASY TO FINISH—WELDBORD paints with smooth finish. Stains to rich, natural walnut or mahogany. No grain raise. No surface checking. No costly special treatment.

WELDBORD

New **HARDWOOD** Wallboard sells for **7¢*** per sq. ft.!

1. LOW RETAIL PRICE. Modern mass production of WELDBORD makes possible this low price—only $\frac{1}{3}$ the former cost of panels of equal quality.

(*According to location of Lumber Dealer. Much less in carload lots)

2. SAVES CONSTRUCTION TIME. WELDBORD comes in light, large $\frac{1}{4}$ "-thick panels (4' x 8', 4' x 7' and 4' x 6'). Easy to handle, WELDBORD eliminates waste, speeds up erection.

3. SAVES FINISHING COSTS. WELDBORD has no grain raise, therefore needs no extra coats of costly special sizes before the application of paint, stain or wallpaper.

TWO GRADES: Water-resistant (blue label) for interior and temporary exterior use. Waterproof (red label) for permanent exterior use (slightly higher price).

Send today for sample and detailed information

UNITED STATES PLYWOOD CORP.

616 West 46th St., New York
BRANCH OFFICES AND WAREHOUSES:
Atlanta • Baltimore • Boston • Brooklyn • Chicago • Cincinnati • Cleveland • Detroit • Los Angeles • San Francisco • Newark • New York • Philadelphia • Rochester • Seattle

WELDBORD

RESIN-BONDED *Hardwood Plywood* WALLBOARD

Company Changes Name

IT HAS been announced that, effective with Jan. 1, 1939, the name of the Carr, Ryder & Adams Company, Dubuque, Iowa, millwork manufacturers, was changed to the Carr, Adams & Collier Company. As no change in either personnel or management was involved, the business, which started in 1866, will be continued as heretofore.

New York Fair Almost Complete

WITH three months still to go before the opening of the New York World's Fair on Sunday, April 30, Grover A. Whalen, president, reports that less than 10 per cent of the \$155,000,000 Exposition remains to be completed. He states that the Fair Corporation itself has been able to make its construction funds go 20 per cent further than had been anticipated in early forecasts. The Corporation has completed twenty exhibit buildings containing 1,085,000 square feet and representing a cost of \$5,000,000, and work is virtually finished on 52 other major structures costing \$6,000,000.

Supreme Nine Appointed for Concatenated Order of Hoo-Hoo

AT THE general conference of the members of the Concatenated Order of Hoo-Hoo, lumber industry fraternity, held at Minneapolis, Minn., Aug. 19 and 20, 1938, the Reorganization Committee was instructed to appoint a new Supreme Nine for the Order. Following these instructions, the Committee selected one member from each of the nine jurisdictions to the Supreme Nine and selected George W. Dulany, Jr., of Clinton, Iowa, for Snark of the Universe. The Committee at that time made no other selections for the different offices, but left this to the members themselves.

Five members of the new Supreme Nine met at Minneapolis Monday, Jan. 16, and assigned jurisdictions and representations as follows:

George W. Dulany, Jr., c/o Eclipse Lumber Company, Clinton, Ia.—Snark of the Universe; George W. Duffy, Duffy Lumber Co., Spokane, Wash.—Senior Hoo-Hoo; Donald S. Montgomery, secretary, Wisconsin Retail Lumbermen's Assn., Milwaukee, Wis.—Junior Hoo-Hoo; Henry M. Wiegand, c/o Martin Wiegand (Wholesale Lumber), Washington, D. C.—Scrivener; Martin J. McDonald, c/o Thunder Bay Lumber Co., Port Arthur, Can.—Bojum; Ulmont M. Carlton, c/o Dix Lumber Co., Cambridge, Mass.—Jabberwock; Kennett Hudson, c/o Hudson-Houston Lumber Co., Ardmore, Okla.—Custocation; L. J. Woodson, c/o Wheeler Osgood Sales Corp., San Francisco, Calif.—Arcanoper; Charles E. Marsh, c/o Memphis Lumbermen's Exchange, Memphis, Tenn.—Gurdon.

Southern Pine Annual Meeting Announced

THE 24th annual meeting of subscribers to the Southern Pine Association will be held in New Orleans, Mar. 22, 23 and 24, at the Roosevelt Hotel, it was announced by H. C. Berckes, secretary manager. He stated that the coming meeting promises to be one of the most important held by the Southern pine manufacturers in the last decade, because of a number of matters of vital concern to the industry which will be considered and acted upon at the three days' sessions.

Among the subjects to be considered are: Progress of the grade-marked lumber program, and plans for its further intensive promotion; proposals for changes in the industry's official grading rules; ways and means by which the pine manufacturers may take full advantage of opportunities afforded for enlarged business brought about by the projected increase in building activities throughout the country during this year; effects of the federal wage-hour law on the industry and other legislative and governmental proposals affecting the lumbermen; trade promotion for the industry; lumber marketing problems under present day conditions, and other matters confronting the lumbermen.

Makes Plans to Promote Products

THE Superior Fireplace Co. of Los Angeles, pioneer manufacturer of Fireplace heat circulators, held its annual sales convention Dec. 27, 28, 29 and 30, at which time complete 1939 sales and advertising plans were formulated to use major national magazines, selected lumber and building supply trade journals.

New MESKER STEEL SASH PRICES *for* 1939

★ *Effective immediately*
are the **NEW ECONOMY PRICES**
on Mesker steel windows and screens.

Write now for the latest discounts that
apply to the list prices shown in the big
MESKER HANDBOOK OF STEEL SASH
and state whether you are a dealer or
a contractor.

Mesker
SINCE 1879

MESKER BROS., 424 SOUTH 7th ST., ST. LOUIS, MO.

Builders and Dealers: Write for Folder giving full description and floor plan, "Western Pine Home." Address Western Pine Association, Yeon Bldg., Portland, Oregon



This Model Home Proves a Vital Selling Point

"You can have a beautiful, well-built home in the \$5,000 to \$6,000 price bracket." This is the message the "Western Pine Home" on Treasure Island—the site of the Golden Gate International Exposition—brings to prospective home builders.

The "Western Pine Home" is a Cape Cod Cottage designed by Architect Royal Barry Wills. It is an inspiring example of the beauty and practical value the Western Pines can contribute to the moderately priced home. The lumber and architectural woodwork throughout are Idaho White Pine, Ponderosa Pine, and Sugar Pine.

Visit this model home when you come to San Francisco. If you go to the New York World's Fair, be sure to visit the Western Pine Exhibit there.

**THE WESTERN PINES WILL
DO YOUR NEXT JOB BETTER
... TRY THEM**

Specify Western Pines



From Association Mills

Western Pine Association, Yeon Building, Portland, Oregon

• Ponderosa Pine
• Idaho White Pine

• Sugar Pine

These are the Western Pines

WEISWAY
ADVERTISING
Builds Business
FOR YOU CONTRACTORS

● Millions of messages in leading magazines are carrying the story of an extra Weisway bath in small space to home owners, prospective builders and buyers. Month in and month out this advertising works for you, Mr. Contractor... creating remodeling jobs, and showing new home builders how they can have what they want, an extra bath, by using Weisways in small space.

You'll sell your homes quicker if you provide an extra Weisway bath. Send now for detailed information on this complete Weisway line.

MAIL
COUPON

WEISWAY
Cabinet Showers

HENRY WEIS MFG. CO., (Est. 1876) 201 Oak St., Elkhart, Ind.
Gentlemen: Without obligation please tell me how builders are using Weisway Cabinet Showers in new and modernized homes.

Name _____

Street _____

City _____ State _____

LETTERS from Readers on All Subjects

Facts, opinions and advice
welcomed here

Wants American Builder on the Air

Salem, N.J.

To the Editor:

Referring to the reading of your circular sent me in the early autumn, "The Truth About Home Building Costs," an idea occurred to me that the *American Builder* on the air would make more people home conscious.

Nothing is more appealing to the vanity of the individual or community than hearing themselves mentioned on the air. Your representative, contacting materials dealers and builders, would learn of proposed projects, construction being done and individual homes being built in different communities. Imagine the swelling pride of young Mr. and Mrs. Smith, having taken the important step of building a new home, hearing the world at large told about it, of its progress, its completion, and finally all about their house warming.

The importance of eliminating the so-called jerry or hatchet and saw builder should also be stressed.

Many interesting programs could be arranged, each having to do with a true incident in different communities.

WILLIAM W. FOWSER, Builder.

A Job for Builders' Associations

Rochester, N.Y.

To the Editor:

I was interested in the letter of J. Harold Genrich, secretary of the Niagara Frontier Builders' Association, in your December issue. We in Rochester have had a similar association for about ten years.

A strong organization in the home building field was never needed more than now. This is due to new laws covering unemployment and old age security and compensation for industrial accidents. As a result of these laws, there has arisen in our industry a class of unscrupulous operators who dodge paying the taxes which sustain these laws. This form of "chiseling" is practiced through fake partnerships and similar devices and there does not seem now any adequate legal machinery to cope with the "chisellers."

By evading these taxes, which run into substantial sums, the "chisellers" are able to shave the costs of construction considerably below the costs per unit to the legitimate contractor. Thus it comes about that the legitimate contractor is penalized through unfair competition.

There is urgent need for a thorough cleaning of the home building industry and that is where strong organization can become effective. Local organizations alone are not adequate for this job. What is needed is a strong state organization with which local associations may be affiliated.

A strong state organization could make its voice heard in the enactment of fair but adequate legislation to drive out the "chisellers," thereby affording protection to the public who buy homes, to the builders who build the homes, and to the workers who are employed in this industry.

Since the federal government is promoting home construction in the interest of business and employment, increased building activity is indicated. This creates a situation that will tend to increase the number of "chisellers" and widen the scope of their activities.

Not only is a strong organization needed to eliminate the vicious practices already enumerated; it is also needed to insure fair dealing in the matter of purchasing construction materials and the employing of skilled mechanics at fair rates of wages and to eliminate abuses as they may arise.

I would be very much interested in hearing from interested builders in other communities, with a view to the feasibility of

(Continued to page 98)

SOLD Installed

The **"OVERHEAD DOOR"**

THE DOOR WITH THE

MIRACLE WEDGE

Blends with every type of construction

BACKED BY

Our Nation-Wide Sales Installation Service

OVERHEAD DOOR CORPORATION

HARTFORD CITY, INDIANA, U. S. A.

CLIP THIS COUPON and MAIL NOW!

MADE IN ANY SIZE AND FOR ANY OPENING,
ELECTRIC OR HAND OPERATION

Please send me literature and full information regarding your product.
I am interested in doors for the particular purpose as checked.

Name

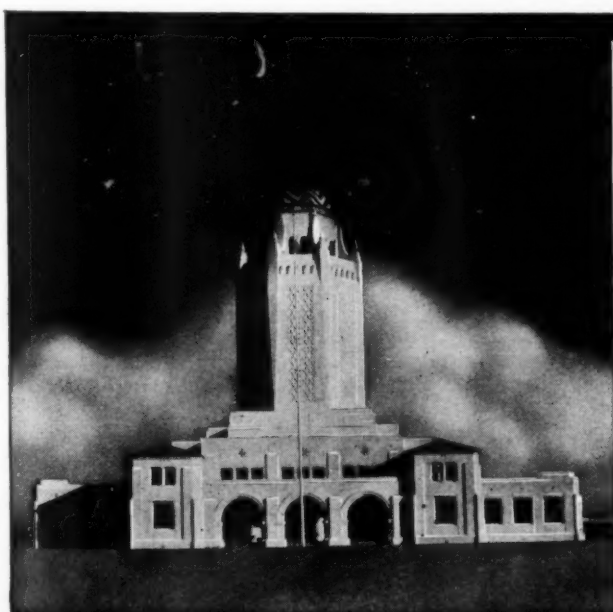
Address

City

State

Mail to: OVERHEAD DOOR CORPORATION, Hartford City, Indiana, U. S. A.

PRIVATE GARAGE
PUBLIC GARAGE
WAREHOUSE
GREASING STATION
WOOD DOORS
STEEL DOORS
FACTORY DOORS
OTHER BUILDINGS
ELECTRIC OPERATORS
AB-2-39



"They" Come and Get It" from Afar

Painstaking contractors in every state in the union, choose Ohio White Lime Finish for their important plaster jobs. They get better production with it and the result pleases architect and owner. Write for Free Booklet on Good Plaster.

The Ohio Hydrate & Supply Company
Woodville, Ohio

OHIO PRODUCTS SOLD EVERYWHERE IN FAMOUS ZIG ZAG BAGS

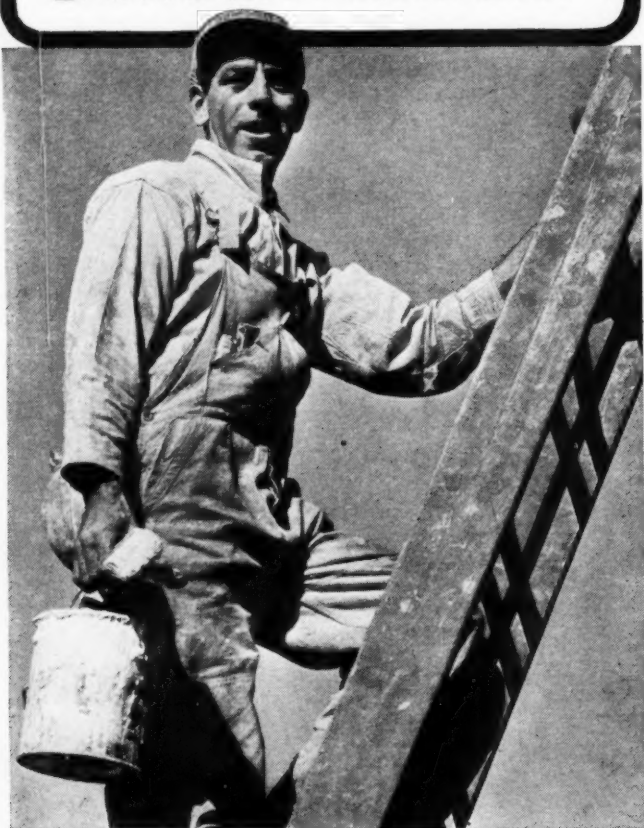
Ohio White Finish—Hawk Spread White Finish—Ohio Rite-wall Fibered Lime Plaster—Ohio Sanlime Finish—Mastite Masonry Mortar—Ohio Masons Lime—Ohio Ground Lime.

Left — Administration Building; Randolph Field, Texas. Architects: Atlee B. & Robt. M. Ayers, San Antonio; Gen. Contr.: Murch Bros. Const. Co., St. Louis; Plaster Contr.: MacGruer & Co., Los Angeles. Ohio White Lime Finish used inside and outside — Ohio Acoustico in auditorium.

The Original

**OHIO WHITE
LIME FINISH**

**FOR PAINTING SECOND-HAND
BRICK YOU CAN'T BEAT
THIS NEW TEAM OF
BONDEX AND
BONDEX-PRIMER!**



The amazing effectiveness of Bondex-Primer in preparing all kinds of masonry surface (painted or unpainted; porous or non-porous) for Bondex is shown on jobs where second-hand brick is used.

Everyone knows how "black-heads" show through and paint peels off this used material. It's good news that these dangers can now be ended by using first a coat of Bondex-Primer, followed by a coat of Bondex Waterproof Cement Paint. For full instructions send coupon below.

WANT FULL INFORMATION? ... WRITE

THE REARDON CO.
2200 N. 2nd St., St. Louis, Mo.

162

Please send complete instructions for painting second-hand brick with the new Bondex-Primer.

Name _____

Address _____

City _____

State _____

LETTERS—

(Continued from page 96)

effecting a state organization. If existing laws are inadequate to cope with the chiselers, then new laws should be enacted and proper machinery set up to force the irresponsible and fly-by-night builders to meet their tax obligations.

ROCHESTER HOME BUILDERS' ASSOCIATION,
By Edward A. Berndt, President.

Both Feet on the Ground

Port Huron, Mich.

To the Editor:

The *American Builder* magazine has been of great interest to me ever since I can remember as my father used to buy it years ago.

I have never yet discovered a magazine of such general interest for one in my business. Keep up the good work.

Yours is the only magazine that is not continually trying to stampede the public into building a "dream house" and decorating it in imitation of some millionaire's home.

JOHN OLDENKAMP,
Oldenkamp Construction Co. (Gen. Contractors & Builders.)

Sensationalism Versus Homes

Shamrock, Tex.

To the Editor:

True, I'm a woman but I believe I am to some extent qualified to talk about homes, both before and after building.

Always interested in home improvement and interior decorating, I married a man who for years was a lumber man but some way just naturally drifted into using the building material himself and became a building contractor.

Every contract brings a surge of joy to me because sometimes I get to help "draw and figure."

So often people want a house, have a certain amount to put into it, but have little conception of the connection of house and home. These houses my husband always tries to make practical, and to be practical, they must meet a lot of requirements.

The first one to be met, outside of suiting the location and neighborhood and pocketbook, needs to suit the people who are to live in it, and the article on "Sensationalism" in the November *American Builder* was what prompted me to presume to write this.

Now that so many people are contemplating building on government insured loans, the magazines are full of plans and to me, so many are really not practical. When I look through a new magazine, the thing I spend first and most time on is house plans—and how I love some of them and dislike others.

In our part of the country the average houses run in cost from \$4,000 to \$12,000, and that money, at least the medium or those about \$5,000 to \$7,000, can't include upstairs, two or three baths, maid's room, etc., and most magazine plans seem to do so. It happens to be quite a habit here to include a maid's room or servant's quarters on the back or over the garage if they are included at all, and often are.

To me it seems very foolish not to include a bedroom on the main floor, because since the house is good only to live in, why not have it both convenient and homey too? All mothers and children, and even the man of the house, need to lie down sometimes. Quite often the mother needs to care for a sick child and prepare a meal at the same time. What comfort is that elaborate living room, dining room, kitchen construction on the first floor if she has to run up and down stairs to care for her loved ones?

I'm talking about the living in the house. Most of these West Texas people do their main housework themselves. Most of them like to entertain; quite often they belong to social and religious organizations which they like to entertain in their homes. The reasonable thing to do before building is to think of and plan for such things. Here again a bedroom in connection with a nice sized living room makes planning a pleasure.

One family my husband was building for had never thought of planning for a place for the piano. After the framework was all up, he happened to hear the daughter playing the piano (they lived in an adjoining house during the building) and asked about

(Continued to page 100)



You Can Get Extra Business through Du PONT *Chromated Zinc Chloride* **TREATED LUMBER**

Its outstanding economies and safety features make it easy for you to sell as a building material and an investment in construction. Customers appreciate its long life - it outlasts an untreated installation of lumber 3 to 5 times, greatly reduces up-keep costs. It eliminates the dangers resulting from partially decayed and termite

infested lumber, and is also fire-retarding, termite repellent, clean, odorless and paintable.

Chromated Zinc Chloride Treated Lumber reaches you - pressure treated to standard specifications. Investigate this profitable material today. Write for further information and nearest sources of supply.



E. I. DU PONT DE NEMOURS & COMPANY, INC.
GRASSELLI CHEMICALS DEPARTMENT
WILMINGTON • DELAWARE

"My saving on 2 jobs paid for it"



YOU CAN
Make Angle Cuts
To 45° on Level
Table As Well
As Full 3 Inch
Straight Cuts
On This 10" Tilt-
ing Arbor Saw!

For Only \$135.00*

**You Can Own This Great 10" Saw
That Pulls Extra Profit Out of Jobs!**

Builders who want the most useful and convenient circular saw to cut time and labor costs choose this 10" Tilting Arbor Saw. Reasons:

1.—It is handiest for angle cutting . . . the saw blade and motor unit can be tilted to make up to a 45° cut through 2 inch stock, *while the table stays level.* 2.—A full 3 inch straight cut can be made. 3.—An exclusive Direct Geared Drive delivers over 30% more power to the blade than belt drives. Stalling is reduced, belt troubles avoided. 4.—Table is big with extra room in front of blade. 5.—Throughout the machine there is perfection of detail, ruggedness and weight that amazes all who see the low price tag. Send coupon for Catalog which tells all about this saw which makes every job more profitable.

*Price for 10" saw with ¾ H.P. Driver Geared Motor; table extensions and guard are extra. Catalog covers models at even lower prices.

WALKER-TURNER LIGHT
POWER
TOOLS

Walker-Turner Co., Inc.,
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Send a copy of new Catalog on your tools.
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FOUR REASONS WHY \$3,000,000 OF PRECISION-BUILT HOMES HAVE ALREADY BEEN BUILT

The builder makes a profit. Precision-Built Homes are built in 30 days—or less. The builder keeps his crews busy—builds three times as many houses with the same number of men—saves on labor—saves on financing costs. He has business brought to him, through both national and localized merchandising plans.

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The house is properly constructed. In every detail of construction, Precision-Built

Homes are built with standard, quality materials and precision workmanship. A Precision-Built Home looks no different, when new—but it stays "new" longer; it is an economical house to heat and maintain.

Precision-Built Homes are advertised—both nationally and locally. Every single advertisement we have ever run has produced a phenomenal response. The public is vitally interested in what you can offer by the Precision-Built method of construction. \$3,000,000 of Precision-Built Homes have already been built. All methods are thoroughly proved. Write today and find out how to get your share of this assured-profits business.

HOMASOTE COMPANY, TRENTON, N. J.



Weatherproof
HOMASOTE
Insulating and Building Board

LETTERS—

(Continued from page 98)

it. There wasn't a place in the house for a piano until they moved some studding and shifted a door.

Another pet peeve of mine is the breakfast room. I may be all wrong but have the satisfaction of feeling right about this important room. Wasn't it "invented" for a convenience to save steps? They surely didn't have anything like that in the home with big rooms where I grew up back in Indiana. Well, in one lovely seven-room house which my husband built—and it isn't the only one he has built on the same order—the breakfast room, big enough for a reasonable sized dining room, was between the kitchen and large dining room, as long but not quite as wide, and instead of being cozy and convenient, just made a lot more work in the home. This same house, though, had the loveliest big combination bedroom and "sitting" room snuggled in at the back between the bedrooms on one side and kitchen and breakfast room on the other, and made the house a mighty livable home.

I'm very fond of the new picture windows, but they need a garden or hillside to make the picture, or they might otherwise look bare.

Probably this is all I had better say at present but would like to have told how we have made a home from a place which we bought here, some of the things which we have done, and some which we plan to do.

I like to read the *American Builder*, not only the articles and house plans but also the advertisements, because there are so very many new things all the time and so often one finds just the thing they have always wanted and didn't know they did. Planning and building homes is truly a fascinating work.

MRS. A. R.

A Good Deed

Butler, Pa.

To the Editor:

I delayed answering your letter of Oct. 20. I was getting letters from different parts of the country, wanting plans, etc., and have something more to write. I placed about 15 copies of *American Builder* in doctors' and dentists' offices, and sold one dentist a stone house; he has already moved into it. So I am quite happy about that.

Last Sunday a Mr. McCoy from New Castle, Pa., which is only 28 miles from here, came to see me and wanted me to invade New Castle and build him that house. He said he read my article in the *American Builder* about six times over. He told me that was the best he ever read on home owning. I drew from his talk that he had been thinking about building a home for a long time, and this made his decision. I will not leave my plan of lots to build anywhere else, but someone will get a job building Mr. McCoy's house. So we can feel we have done someone some good.

I want to thank you again for the very splendid way you handled my article, and everything connected with it.

I will some time later send you some pictures of interior views of many different houses, which you could probably use.

Thank you again, and best wishes for the success of *American Builder*.

W. C. JAHNIG, Builder.

Wants More on Building Products

Chicago, Ill.

To the Editor:

Specialized treatment of different building products in each issue is in my opinion a good idea; keep it up.

EDWARD FORRESTER,
Carpenter & General Contractor.

Plywood Handbook

Canton, Ohio.

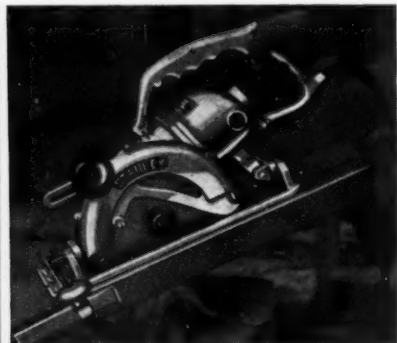
To the Editor:

Please send us two copies of the *American Builder*, dealer edition, December issue.

We are interested in the plywood section of this magazine, and wish to congratulate you on the splendid writeup you have given this product.

THE TOMBAUGH LUMBER CO.,
By S. F. Tombaugh, President.

New! STANLEY SAFETY SAW



CUTS 2 $\frac{7}{8}$ " STRAIGHT or 2 $\frac{1}{16}$ " AT 45°

**With unique Duplex Handle
that affords ease in any position**

Duplex Handle on new W8 Saw has two gripping positions, with trigger switch at each, for a comfortable "feel or hang" no matter what position your sawing requires. One adjustment controls depth of cut to maximum of 2 $\frac{7}{8}$ " with blade square with base, or 2 $\frac{1}{16}$ " with blade set at 45° with base. Universal motor for 110 to 250 volts as specified. Full equipment and Saw come in handy steel carrying case. Try this new Saw at your distributor's, or write for literature. Stanley Electric Tool Division, The Stanley Works, 133 Elm St., New Britain, Conn.

STANLEY ELECTRIC TOOLS
"COST LESS PER YEAR"

**IMPROVE THE ATTRACTIVENESS
OF THE HOMES YOU BUILD...**
with these quality accessories



• Quality appointments make homes easier to sell. Get improved attractiveness with Marsh Bathroom Accessories. Their beauty, utility and convenience are unsurpassed. Finished in durable chromium... and featuring a smart octagon design... they provide class and quality at an attractive price.

A patented, concealed fastener... an exclusive Marsh feature... makes a neater... more substantial... installation; quick method of alignment saves time... lowers installation costs. Install Marsh quality bathroom accessories in all future homes you build. They make an impression!

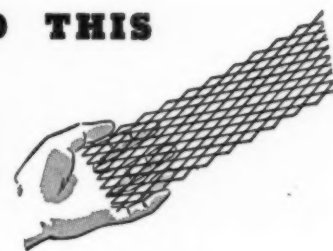


Send postal card for folder featuring Marsh Bathroom Accessories and "Concealed Fastener" method of installation.

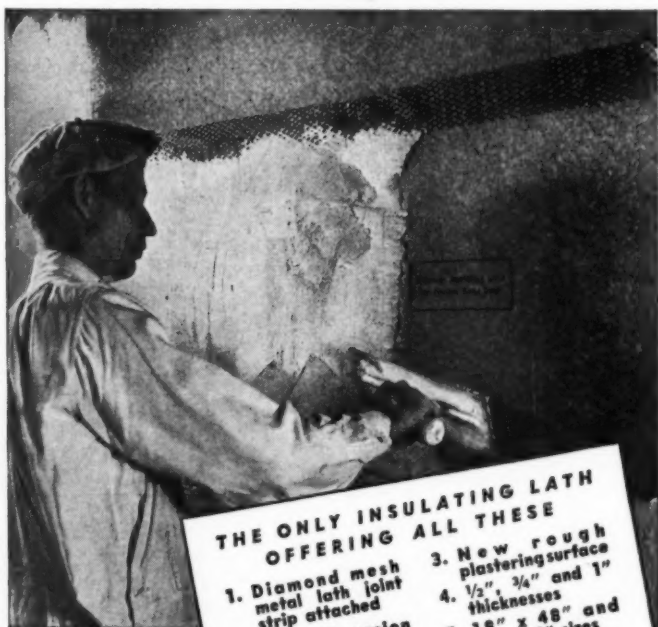
MARSH WALL PRODUCTS, INC.
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MARSH Bathroom ACCESSORIES

**YOU'VE USED
THIS AND THIS**



**NOW MASONITE
GIVES YOU BOTH IN ONE!**



**THE ONLY INSULATING LATH
OFFERING ALL THESE**

1. Diamond mesh metal lath joint strip attached
2. Long dimension edges are ship-lapped
3. New rough plastering surface
4. $\frac{1}{2}$ ", $\frac{3}{4}$ " and 1" thicknesses
5. 18" x 48" and 24" x 48" sizes

Another MASONITE FIRST! Improved Masonite Insulating Lath with 3-inch diamond mesh metal lath joint-reinforcing strip attached. And a new rough surface on the insulating lath that makes plaster application quicker, easier, better.

With the diamond mesh metal strip firmly stapled along one edge of the insulating lath, greater strength is given to the plaster at the point where strength is needed to reduce possibilities of plaster cracking. The new rough surface of the Masonite Insulating Lath permits a smoother, more economical plastering job. The long dimension edges of the board are ship-lapped to further reduce possibilities of plaster cracking.

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THE WONDER WOOD OF A THOUSAND USES

A Mississippi Product—Sold by Lumber Dealers Everywhere

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111 W. Washington St., Chicago, Ill.

Please send FREE sample and more information about Improved Masonite Insulating Lath with diamond mesh metal lath strip attached.

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Address _____
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Makes Heating History

● Payne scores again! Now every conceivable function of a modern gas-fired furnace has been incorporated in one compact unit—the Payne ZONEAIR! It automatically heats, circulates, purifies, ventilates, and humidifies—and introduces, for the first time, true *zoned heating*.

Compact ZONEAIR units may be set up in batteries of two or more, each furnace operating independently and furnishing purified, healthful, circulating heat to separate suites or rooms at the exact temperature desired. Here is *controlled warmth where you want it!*

In the new Payne ZONEAIR not a single possible improvement has been overlooked. From every angle this new furnace which introduces a modern, perfected system of economical *zoned heating* sets a new, history making standard.

Write for further information.

Payne

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BEVERLY HILLS • CALIFORNIA



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MODERN 3 1/2-S TRAIL-MIX

LESS WEIGHT — END DISCHARGE
COMPACT — AIR-COOLED ENGINE
FASTER WHEEL BARROW LOADING
ANTI-FRICTION
BEARINGS



WRITE FOR
BULLETIN TODAY!

KWIK-MIX CONCRETE MIXER CO.
PORT WASHINGTON . . . WISCONSIN

Mass Production Methods

(Continued from page 44)

variety of attractive colors. They also use porcelain enamel hoods over the front doors (see Figs. VI and VII).

The corner pieces are 4 by 4-inch angles made of 18-gauge U. S. Steel Vitrenamel stock, enameled in white, grey, light blue or blue-green. Where the corner piece joins the asbestos siding shingles the enamel metal has a narrow flange returning toward the wall of the building and a flange going under the shingles. The shingles thus conceal the attachment holes and the construction is self-flashing and watertight. In addition, the joint between the shingles and the corner piece is tightly caulked.

The enameled steel cornice is a one-piece watertight unit supplied in standard sizes with the same self-flashing device. There are 7 styles of entrance hoods of 16-gauge U. S. Steel Vitrenamel in 5 different colors. The use of porcelain enamel exterior trim with asbestos cement exterior siding shingles is designed to give a permanently upkeep-free house.

Interior trim is also of enamel steel, including a steel base and cove molding. This trim is delivered with the finish coat of enamel applied and is screwed in place. The entire interior treatment of the house is planned to practically eliminate painting on the job. Interior walls, as described in the December *American Builder*, are of 5/16-inch plywood over which a heavy interior wall covering is applied. This consists of a 3/32-inch felt base product with a tinted resin surface, called "Monocousec" which is washable and resistant to wear.

Steel Stairs and Closets

The builders claim that four bolts and five minutes' time are all that are required for the installation of one-piece lightweight steel stairs used in the Clairton houses (see Fig. II). The stairs are delivered with the final enamel finish and linoleum treads already applied and are set into place very quickly. It is in the installation of such prefabricated units as these that the importance of engineering precision in dimensioning openings is apparent.

Another new departure employed in the Gilbert and Varker houses is the use of factory-assembled steel closets instead of the standard type of closet built on the job. These steel closets, made by the Lyon Metal Products Company of Aurora, Ill., are equipped with reinforced steel doors, shelves, hooks and a factory baked-on finish.

Brief specifications of the Clairton homes include the following:

BASEMENT WALL TILE—8" x 8" x 16" Speedlock hollow tiles, National Waterproofing Co.

PLYWOOD—Interior and exterior walls 5/16" Douglas fir plywood by U. S. Plywood Corp.

INTERIOR WALL FINISH—Monocousec felt-base wall covering by Bird & Son.

INSULATION—Sheet steel by American Flange & Mfg. Co.

EXTERIOR WALLS—Asbestos-cement siding shingles by Johns-Manville.

ROOFING—Certain-teed and Bird & Son asphalt shingles over a heavy building paper, fir plywood sheathing.

CHIMNEY—Johns-Manville transite flue pipe, 2 1/4" x 11 1/4".

HEATING—Gas-fired American Radiator Co. boiler, hot water system, with built-in Taco, copper fin radiators by Tuttle and Bailey.

WINDOWS—Factory painted and assembled steel casements complete with metal trim, hardware, screens and glass—Michael Flynn Co., Philadelphia.

(Continued to page 104)

Every Home Should be Calked

STOPS DRAFTS AND LEAKS—CUTS FUEL BILLS



COLD ROOMS?
MAKE THEM WEATHERTIGHT WITH PECORA



DRAFTY DOOR FRAMES?
CALK WITH PECORA



DRAFTY WINDOW FRAMES?
CALK WITH PECORA

There is as little excuse for non-calked window and door frames in a new house as there is for an incomplete roof. This weatherproof protection can be readily provided at small cost.

CALK all Joints

WITH PECORA COMPOUND

Be sure to calk with Pecora, the first choice of leading architects and builders for 30 years. Properly applied, Pecora will not dry out, crack or chip. Available in bulk or in non-refillable metal cartridges of approximately one quart size for use with the new improved Pecora High Pressure Calking Gun, illustrated below.

This Gun



With 3 Nozzles and 4 Cartridges of approx. 1 qt. each
Shipped Express Collect for **\$7.00**

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Pecora Paint Company, Inc.

Member of Producers' Council, Inc.
Established 1862 by Smith Bowen

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ALSO MORTAR STAINS • SASH PUTTIES • ROOF COATING
• PECOMASTICS FOR STRUCTURAL GLASS INSTALLATION

Does Whole Job— from Start to Finish!

New Model "A" Planing Mill
Special



Here are 8 machines in one, each full-sized and each independently operated. All bearings high-grade ball bearings. Sturdy, compact, with no excess weight, the New Model "A" is low in initial cost and in operating expense.

Send for catalog of individual and combination machines, priced as low as \$50.

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Good Woodworking Machines Since 1887

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SCAFFOLD BRACKETS SAVE YOU BIG MONEY

Thousands of Builders and Painters in the last 25 years Have **PROVED** that **RELIABLE** Scaffold Brackets are **Safer, Stronger, more Dependable.**

Prove it to yourself that Reliable Brackets cost less and are easier to erect and remove. They are far less bulky to handle. Can be used on wood or stucco with infinite ease. Are amazingly superior in every way to wooden scaffolding. The savings to you are obvious.

GUARANTEED. All "Reliable" brackets are sold on one basis only—"Satisfaction Guaranteed or Your Money Back."

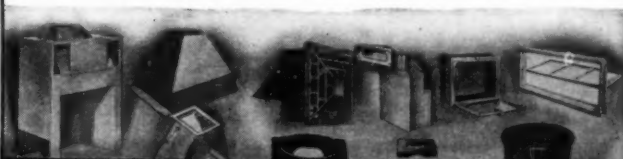
WRITE TODAY. You owe it to yourself to find out all about Reliable Scaffold Brackets. Write us today for **FREE** literature.

RELIABLE JACK CO., 1401 W. Second Street, Dayton, Ohio

RELIABLE

SCAFFOLDING BRACKETS

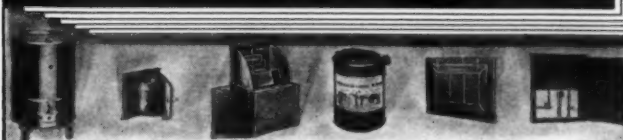
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MAJESTIC FIREPLACE DAMPERS

Majestic dampers are designed to insure maximum fireplace efficiency ... to prevent smoking, control draft, and simplify fireplace construction. The damper valve when open forms a deflecting shield for the down draft. Closing tightly against the frame it is

ideal for air conditioned homes. Poker control furnished as standard equipment. Face or end control supplied at slight extra cost. The built-on lintel rests flat upon the masonry, saving materials, time and labor. Years of exposure to heat, smoke, soot and rust will not impair the efficiency of either the damper or controls. Write today for catalog of Majestic's Complete Line of Dampers and other Building Products.



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THE McNAIR SHINGLE HOUSE THAT JACK BUILT



I chose ROBT. McNAIR SHINGLES for—


- *HEALTH**
My family preferred the warmth of real wood.
- *ENDURANCE**
My roof will last as long as the house itself.
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My home is warm in winter—cool in summer.
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My purse was small and I didn't use it all.

—AND FINALLY—the New England tornado decided me on shingles.

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ROBERT McNAIR SHINGLE CO.
VANCOUVER, BRITISH COLUMBIA
"OVER 400 DEALERS TO SERVE YOU"

"Going to Town" with the new
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3½-S



You Get MORE for Your Money!

The new Smith 3½-S Tilter turns out MORE concrete per day—and BETTER concrete — than any other small mixer. Built like the big Smith BOULDER DAM mixers! Handy feed chute loading — famous "End-to-Center" mixing action — fast "Tilt and Pour" discharge — pneumatic tired, roller bearing wheels. Yet Smith Tilters cost no more than most "tub" mixers.



The Mixer with the Short 40° Tilt as compared to the 180° Tilt required by any other tilting mixer. One quick short motion of the tilt lever, and in a few seconds the concrete is poured out. Write for literature.

The T. L. SMITH COMPANY
2849 N. 32nd Street Milwaukee, Wis.

SMITH MIXERS
THE BOULDER DAM MIXERS

Mass Production Methods

(Continued from page 102)

LIGHTING FIXTURES—Colonial semi-indirect with plastic shades by Chase Brass & Copper Co.

STEEL STAIRS—14-gauge, factory-built and painted stairs by Overly Mfg. Co., Greensburg, Pa.

DOOR BUCKS—20-gauge steel complete with metal trim and welded half butts—Overly Mfg. Co.

BATHROOM WALL PANELS—18-gauge, porcelain enamel, 36" x 42", Ingram-Richardson Mfg. Co., Beaver Falls, Pa.

METAL BASE AND COVE MOLDING—Knapp Bros., Joliet, Ill.

METAL CORNICE—Colored porcelain enameled steel cornice, corner boards and rake pieces—Ingram-Richardson Mfg. Co., Beaver Falls, Pa.

SHUTTERS AND ENTRANCE HOOD—Colored porcelain enameled steel, Porcelain Metal Corp., Louisville, Ky.

STEEL CLOSETS—Lyons Metal Products Co., Aurora, Ill.

KITCHEN CABINETS—Modern Steel Equipment Co., Geneva, Ill.

MODERN KITCHEN SINK—60", 14-gauge porcelain enameled steel sink enclosed in cabinet—Briggs Mfg. Co.

TUBS AND LAVATORY—Pressed steel porcelain enameled in colors by Briggs Mfg. Co. and Porcelain Products Co.

MEDICINE CABINETS—F. H. Lawson Co.

STEEL SILL AND RIBBON—Steel sill and ribbon with welded studding spacer tabs—Overly Mfg. Co., Greensburg, Pa.

Low Cost Homes in Westchester

(Continued from page 47)

in the most modern equipment. They'd prefer to continue renting.

Mr. Haring was induced to initiate low-cost housing in high priced Westchester because he was convinced that the hitherto total lack of a supply to meet the demand for a well built, modern \$5-6,000 home would tend to overcome sales resistance to a point where advertising costs could be slashed to a minimum. In the past ten years Haring & Blumenthal has built over 800 one-family homes in the Metropolitan area and experience has shown them that there are three factors which spell the success or failure of any building project. Here they are:

1. There must be a real demand.
2. It must be feasible to apply the principles of mass production so that costs can be lowered to a point which enables the builder to take a reasonable profit.
3. Specifications must include not only the same high grade of materials that are used in better houses, but enough extra features must be added to stimulate a quick turnover.

In planning the "Cottage Homes" developments in Westchester, Mr. Haring discovered at once that it would be necessary to purchase land in "B" locations, since land costs necessarily had to be limited to 10% of the selling price—or \$500. Such a location was found on Leffingwell Place in New Rochelle, and eight houses were put into production, to sell for \$5,000.

A careful study showed that the only promise of success for such a project at so low a sales price would be to steal a page from the book of production-line manufacturing. Since he could not build the houses in a factory he brought the factory-perfected methods to the building site. The plans were not just drawn—they were engineered. Walls and ceilings were finished in Rezited plywood panels in Douglas fir and mahogany. Stud and joist locations were laid out with the panel width as a module. Plumbing, heating and electrical installations were detailed and the mechanics trained to repeat their operations from building to building. The position of every opening was keyed to the wall panelling, as also

(Continued to page 106)

Cut Costs-Increase Profits

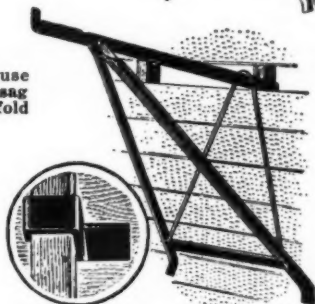
WITH TIME SAVING SCAFFOLD BRACKETS!

YOU'LL positively save time—reduce material cost—and make more profit by using these trouble-proof "Trouble-Savers." They're quick to erect, quick to take down, and fold to a minimum of space.

The "TROUBLE-SAVER" nail-attached bracket (above) requires only four nails. Easiest of all brackets to erect. Supports a ton. Pays for itself on a few jobs. Investigate now!



The "Trouble-Saver" studding bracket (below) hooks around a studding. Stands as solid as the house itself. Can't bend—can't slip—can't sag—can't break. Simply unhook and fold up when finished. It'll pay you to use these brackets. Our complete line of "Trouble-Savers" also includes corner brackets, bolt brackets, ladder jacks, adjustable roofing brackets, adjustable steel trestles, single pole scaffolds, etc.



WRITE TODAY

for catalog and prices!

"TROUBLE-SAVERS" Scaffolding Brackets

THE STEEL SCAFFOLDING CO., INC.

GOVERNOR AND MISSOURI STS., EVANSVILLE, IND.

New! EXTENDA

Adjustable
ALL METAL
WINDOW
SCREEN

The fine mesh bronze screen unit is quickly removable from the frame. Easily and inexpensively replaced if necessary.



As easily adjusted as a curtain rod! Quickly installed from the inside without tools. Neat metal frames, finished like the barrel of a fine gun with Has-kelite, require no painting or maintenance.

7 Stock Sizes Fit 28 Openings

More profits in screens! Meet all demands from 7 stock sizes instead of 28. Extensions operate both vertically and horizontally with 2" adjustment. Installation requires no fitting or trimming, even though openings are out of square, or warped. Extenda means lower installation costs, smaller inventory, less storage space. Saves money on installation and maintenance, increases resale profits. Perfect protection from insects, with full sash operation.

Literature Free

Full information, prices and discounts on request.

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211 Field Building, Birmingham, Mich.

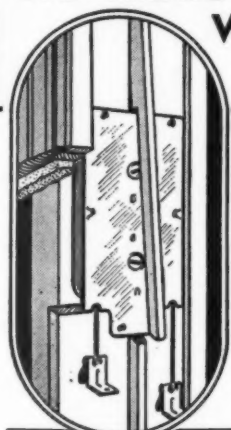
Some desirable territories open for aggressive representatives. State lines handled and give full information in first letter.

Low Prices

\$2 and \$3 Retail



NO MORE OLD FASHIONED WINDOW WEIGHTS AND PULLEYS!



Specify

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Adjustable Sash Balance

GET ALL THREE OF
THESE FEATURES

1. **Adjustable**—Duplex is adjusted to perfect balance AFTER INSTALLATION.
2. **Installed Flat**—Duplex fits flat within an opening in the standard pulley stile. Allows narrow mullions and casings.
3. **One Balance for Both Sash**—Duplex two-in-one feature cuts shipping and installation cost, and produces a more satisfactory job.

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Ask about our new
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These improved saws have more powerful motors, larger gears, stronger housings that will stand abuse, and larger blades for greater cutting capacity. Each saw is equipped with a swivel base for angle cuts up to 45 degrees, and the MALL PATENTED APPROVED SAFETY GUARD—the only guard that gives complete protection without interfering with the operator. Models: 2 1/2", 3", 3 1/2", 3-13/16", and 4 1/2". Save time on every job!

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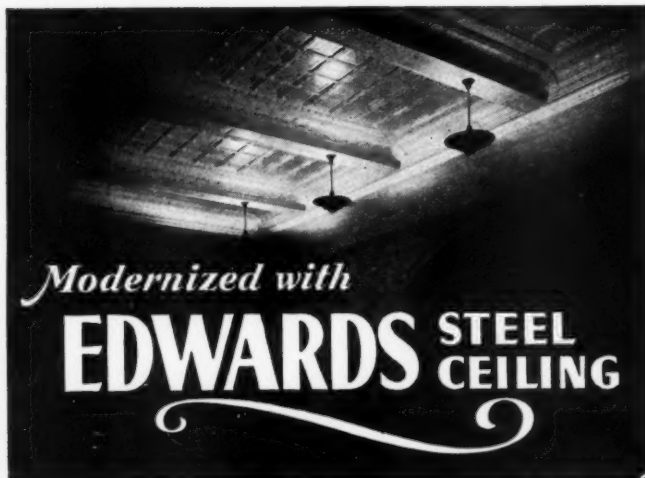
Also, inquire about door planes, door mortisers, concrete vibrators, concrete surfacers, and electric drills.

Please send additional information on the Model 1AA and other MALL Electric Handsaws.

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EDWARDS STEEL CEILING

THERE are plenty of prospects for installations like the above in private homes, schools, churches and public buildings in your community. Merchants realize that they must make their stores attractive, fire-resistive, clean, cheerful and spotless if they are to meet competition. Edwards Steel Ceilings accomplish this without interfering with the normal activities of the building occupants. Make your installation before the rush season for outside work.

Write for Catalog No. 180. Send ceiling measurements for estimate.

The Edwards Manufacturing Co.,
542-562 Eggleston Avenue, Cincinnati, Ohio

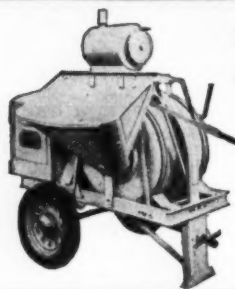
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3 1/2 S
with the
Famous
AIR-COOLED
Engine That
Use on Jaeger
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Patented Jaeger
"V" Spot Drum

Hundreds of Pounds Lighter - Compact,
Husky, Easy Handling, on Springs
Timkens, Pneumatics - and with Handy End Discharge

BOTH JAEGERs—BOTH MONEY-MAKERS



3 1/2 S UTILITY WITH MEASURING BATCH HOPPER
Fast as a Power Loader—Up to 40 Yds. a Day
Load next batch while you mix and discharge—no waiting—30% to 40% more yardage daily, all your job can handle. Saves you about half the cost of heavy 5S Non-Tilts. Get new catalog and prices.

THE JAEGER MACHINE COMPANY
521 Dublin Avenue Columbus, Ohio

Low Cost Homes in Westchester

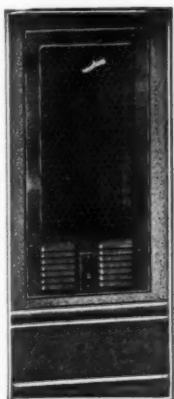
(Continued from page 104)

were the heating and electrical outlets. Rather than attempt to conceal the joints in the plywood interior finish these joints were featured architecturally as small V-joints in conservative wall panel designs and decorative ceilings. All joints were solidly backed by the framing and sealed with a flexible compound to allow for a little expansion and contraction. All inside corners were closed with mouldings.

When Mr. Haring was questioned about materials he stated, "As to the quality of the materials used in these buildings, a glance at the list of firms supplying them will suffice. Johns-Manville for Rockwool wall and attic insulation, asbestos sidewall shingles, roof shingles, bathroom wainscot, asbestos flush siding and transite flues; Standard Sanitary Company for plumbing fixtures; Weyerhaeuser No. 1 lumber for framing; Curtis for millwork and Silentite windows; Anaconda for brass pipe and copper leaders and gutters; Tile-text for asphalt tile on bath and kitchen floors; National Oak Flooring Assn. for finish floors; Vaporseal Celotex for under floor joists; Whitehead or Lovekin automatic gas water heaters; Bryant gas fired air conditioners; Boro Wood kitchen cabinets; National Brass Company hardware; Hall-Mack chrome accessories. Quantity purchases of these materials effected substantial savings which were reflected in the sales price. For purposes of economy, all houses were of the same design, but variation was achieved through using different color roofs, adding a picket fence to one—a rose arbor to another, etc. They are easy to heat in winter, cool in summer; they would require a minimum of upkeep expense (we figured the exteriors as practically imperishable and certainly fire-resistant as well as requiring no re-painting ever). The public accepted them with whoops of joy! Scarcely had we made our initial announcement than several were sold from the blue prints. In a short time the entire group was sold out. We then purchased a second tract in New Rochelle on Askins Place, in a somewhat more central location. We ventured into a variety of the first design with a two-story house, which also received immediate acceptance though the price was raised from \$5,350 to \$5,850. In a short time this group was also sold out.

"The third group of 'Cottage Homes' was launched in Rye, and again we varied the design, adding porches, picket fences, etc. Garages were also added, when desired, for an additional \$390. The original basic plan, however, was adhered to and we used wallpaper over the dry wall construction, which we believe makes the houses gayer and more salable. Our Rye project is directly opposite the Rye Country Club, and ten minutes from beautiful Oakland Beach which is restricted, without charge, for the use of Rye residences. We accordingly added to the price of our Rye 'Cottage Homes' from \$5,150 to \$6,500.

"Our most recent 'Cottage Homes' development is just getting under way in Eastchester, in an attractive and convenient location called Oakridge Gardens. This group is designed for the \$50 a week man. We've added a definite architectural exterior beauty to these houses. We're including garages, and in some instances fireplaces. The designs are for 2 story houses, in Colonial design. In some cases they will be finished on one floor only, with plumbing run up to the second floor, a stairway built and preparations made for future expansion. We anticipate a splendid building year in 1939 and have laid out an ambitious building program, catering to that hitherto 'forgotten man' the chap who earns \$50 a week, and knows how to salt it away."



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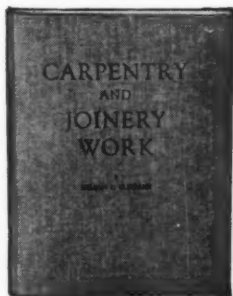
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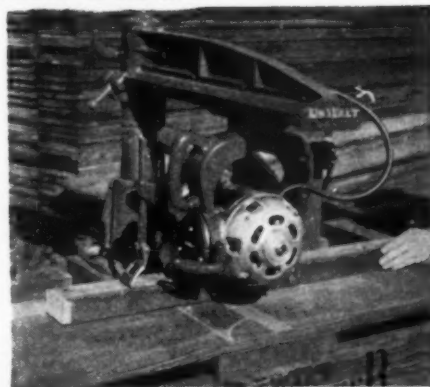
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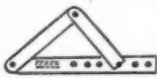
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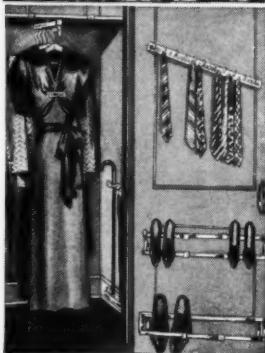
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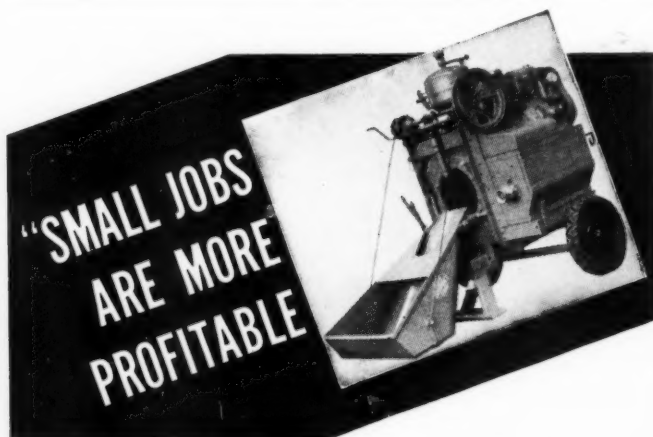
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MIXERS

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What Is TruCost Estimating?

By A. W. HOLT

(Continued from page 66)

estimating is only beating himself. Nobody ever got any place trying to "hog it."

Foundations and Basements

Foundation requirements for *American Builder* designs are given by the first four items of *TruCost* unit quantities. Most designs do not show the basement plan. Some show recreation rooms, etc. Regardless of what the plans may show, basement partitions are not listed and, of greater importance, remember this:

The linear feet of basement walls always give the largest possible basement under all the house—except attached garages and porches; foundations for these are listed as trench walls.

Basement floors are likewise based in accordance with basement walls with a separate item for the floor of an attached garage.

Excavation is given per foot deep a foot larger than the size of the house on all sides, as is the customary practice. The trench excavation is included on the basis of 24 inches wide to allow for the usual twice-as-much cost. Multiplying by the depth of excavation required by the building site (some must fill around instead) gives the total yardage to figure.

Many of the plans shown without basements are wanted with basements; so, to simplify everything and make it easy to remember, all plans are surveyed as having full basements.

In conclusion, watch future issues for typical examples illustrating the ease and simplicity of *TruCosting*. Suffice now to say to each of you in the building industry who wish to have your own *TruCost* in your own locality—

Your own unit costs will govern the accuracy of your *TruCosts*, and it is interesting work to compile these and know your local unit costs.

HoltRates will be explained again next month and a "Summary" form will be illustrated to show how it is practically impossible to omit any items from one's *TruCost*' estimate. In the meantime each one can compile his local unit costs, as shown by Fig. 2, and be prepared to "go to town" selling homes in 1939.

Small Brick Homes Selling Fast

(Continued from page 67)

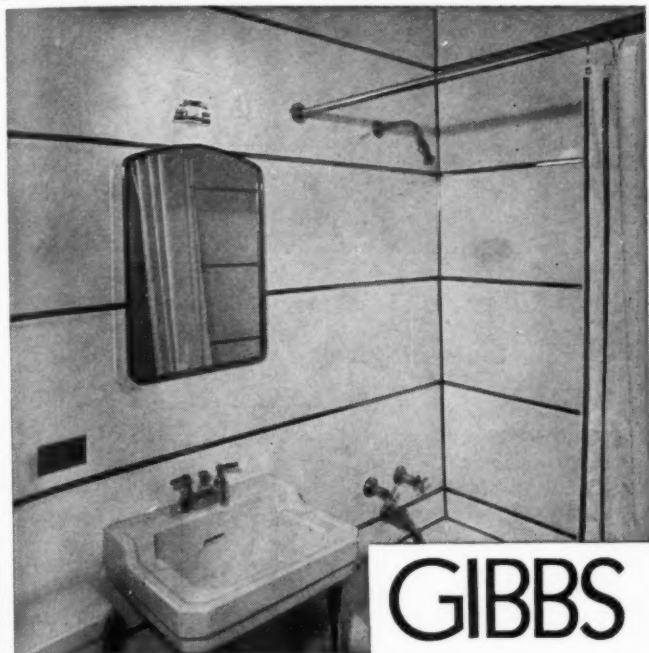
a disappearing stairway up into the attic space where a clothes line is stretched for convenient drying.

Floors are oak over concrete, except the inlaid linoleum in kitchen and tile in bathroom; bath has recessed tub and shower. Other features are: Nappanee kitchen cabinets, automatic oil burning hot water heater, steel casement windows with winter storm windows, and bronze screens, plastered walls, complete interior decoration, attractive electric light fixtures, window shades, landscaping, and public utilities all in and paid for; no future assessments.

This subdivision is known as Villa Shores and is within easy commuting distance of the Gary, Buffington, Indiana Harbor, East Chicago and Hammond industrial districts. It is a clean and quiet home neighborhood, with good school facilities. Evidently the right commodity is being planned and built for today's market. More houses of the same type are on the Elliot & Kranz program for 1939.

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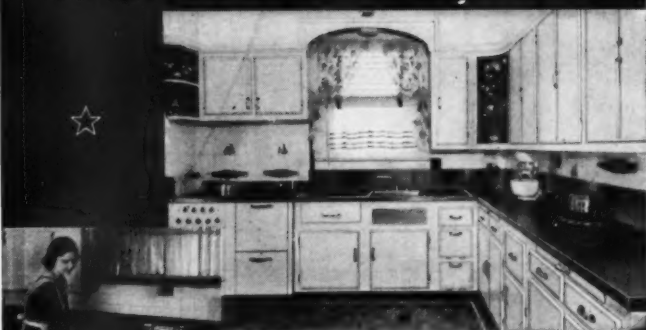
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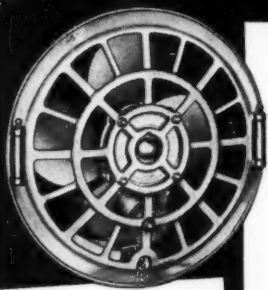
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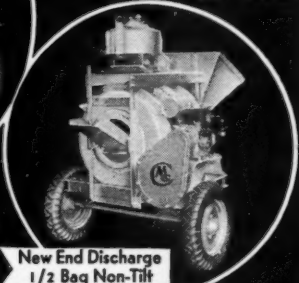
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Eliminating Dampness in Old Brick Walls

(Continued from page 79)

two or three brick in one course. A cross-cut saw was obtained and the handle removed from one end, which was then inserted through the opening formed, and the handle of the saw reattached at the opposite side of the wall. Two men then operated the saw in the usual way, to cut out the mortar between two courses of brick. The lime mortar is readily removed in this way without excessive wear of the saw. Short strips of 16 oz. copper of a width slightly greater than the thickness of the wall were then laid in place as fast as the cut was made, not more than four feet of the wall being under-cut before the copper was put in place. The ends of the copper strips were lapped suitably, and some extra filling material such as Ruberoid-type roofing also inserted as a filler to take up some of the clearance. No means were taken to support the under-cut part of the wall, and it was permitted to settle upon the inserted material as it would, it being figured that the slight settlement involved was within the elastic limits of the materials of the wall, and so would involve no risk of fracture.

The joint newly formed was pointed up exteriorly to match the rest of the wall.

In this way it was not necessary to disturb the floor, or to do any excavating, and by renewing the grounds and nailing the base and shoe back in place against the floor, the job was completed.

Extreme care is necessary in making substantial openings in very old buildings built with lime mortar. Attempts to introduce a copper sheet dam in old walls by removal of a number of courses of brick, inserting the sheet and rebuilding the courses, have resulted in collapse in some instances. The method here disclosed worked as described without any fractures appearing, and without more difficulty by reason of frailty of the wall than an occasional loose brick.

In the case where there is a sufficient elevation of the floor above grade, and no basement, it would be desirable to make an entrance through a rear wall to the space beneath the floor, and make the copper insert in a course a distance below the first floor joists. In the case mentioned, however, there was not space enough above grade to permit such an operation, without considerable expense for excavation both inside and outside.

Copper seems to be the best available material for such an operation, zinc being liable to attack by the lime of the mortar when wet, and for that reason both galvanized iron, zinc, and brass sheeting are not satisfactory. The copper and lime react to form an insoluble coating (basic copper carbonate) so that a permanent dam and stop is provided, impermeable to moisture and impenetrable by boring insects.

Instances of this kind show the importance of providing for the interposition of a waterproof stop sheet or other means immediately above the ground level in all houses, either frame or masonry. A coating of asphalt may be found effective, but sheet copper is the best approved means, and by extending it inwardly beyond the face of the wall or footing, two or more inches horizontally, it will also serve as a stop for termite tunnels, which might otherwise be extended from the ground below the joint to joists and other framing above, some distance from the ground. I have noted a tunnel extending over the inner face of a portland cement concrete wall from a cellar floor to first floor timbers ten feet above, the termites having gained entrance at the lower part of the wall by boring or working through stratified parts of the concrete. This particular wall was banked by earth to a grade nine feet above the cellar floor, well drained and dry.—Horace L. Woodward.